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Dakar

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GEOGRAPHICAL HANDBOOK SERIES

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FRENCH WEST AFRICA

VOLUME II

THE COLONIES

DECEMBER 1944

NAVAL INTELLIGENCE DIVISION

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PREFACE

IN 1915 a Geographical Section was formed in the Naval Intelligence Division of the Admiralty to write Geographical Handbooks on various parts of the world. The purpose of these Handbooks was to supply, by scientific research and skilled arrangement, material for the discussion of naval, military, and political problems, as distinct from the examination of the problems themselves. Many distinguished collaborators assisted in their production, and by the end of 1918 upwards of fifty volumes had been produced in Handbook and Manual form, as well as numerous short-term geographical reports. The demand for these books increased rapidly with each new issue, and they acquired a high reputation for accuracy and impartiality. They are now to be found in Service Establishments and Embassies throughout the world, and in the early years after the last war were much used by the League of Nations.

The old Handbooks have been extensively used in the present war, and experience has disclosed both their value and their limitations. On the one hand they have proved, beyond all question, how greatly the work of the fighting services and of Government Departments is facilitated if countries of strategic or political importance are covered by handbooks which deal, in a convenient and easily digested form, with their geography, ethnology, administration, and resources. On the other hand it has become apparent that something more is required to meet present-day requirements. The old series does not cover many of the countries closely affected by the present war (e.g. Germany, France, Poland, Spain, Portugal, to name only a few); its books are somewhat uneven in quality, and they are inadequately equipped with maps, diagrams, and photographic illustrations.

The present series of Handbooks, while owing its inspiration largely to the former series, is in no sense an attempt to revise or re-edit that series. It is an entirely new set of books, produced in the Naval Intelligence Division by trained geographers drawn largely from the Universities, and working at sub-centres established at Oxford and Cambridge, and is printed by the Oxford and Cambridge University Presses. The books follow, in general, a uniform scheme though minor modifications will be found in particular cases; and they are illustrated by numerous maps and photographs.

The purpose of the books is primarily naval. They are designed first to provide, for the use of Commanding Officers, information in a comprehensive and convenient form about countries which they may be called upon to visit, not only in war but in peace-time; secondly, to maintain the high standard of education in the Navy and, by supplying officers with material for lectures to naval personnel ashore and afloat, to ensure for all ranks that visits to a new country shall be both interesting and profitable.

Their contents are, however, by no means confined to matters of purely naval interest. For many purposes (e.g. history, administration, resources, communications, &c.) countries must necessarily be treated as a whole, and no attempt is made to limit their treatment exclusively to coastal zones. It is hoped therefore that the Army, the Royal Air Force, and other Government Departments (many of whom have given great assistance in the production of the series) will find these Handbooks even more valuable than their predecessors proved to be both during and after the last war.

J. H. GODFREY

Director of Naval Intelligence

1942

The foregoing preface has appeared from the beginning of this series of Geographical Handbooks. It describes so effectively their origin and purpose that I have decided to retain it in its original form.

This volume has been prepared by the Oxford sub-centre of the Naval Intelligence Division under the direction of Lieut.-Colonel K. Mason, M.C., M.A., R.E., Professor of Geography in the University of Oxford, and is the work of a number of contributors, whose names are given on page 562.

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Director of Naval Intelligence

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CHAPTER I

INTRODUCTION

MOST of the larger countries described in these Handbooks extend to more than one volume, and each volume deals exhaustively with some few characteristics. Such a division of the subject is not the most useful for French West Africa, since this vast territory is made up of eight individual parts each with its own character and all fitted, by accident rather than by design, into a complicated pattern of European overlordship (Fig. 1). For understanding it is necessary first to deal with West Africa as a whole, in so far as Nature has shaped it, and to examine history and development under the French flag with an eye to conditions in neighbouring, but foreign, parts. So much has been the theme of Volume I.

In this present volume the various colonies which together make up the Federation will be described separately, each one in its own chapter, and each separate aspect in a section of that chapter. During its compilation additional information has come in, and, where there are minor disagreements between Volume I and Volume II, the latter is the more authoritative.

It will be helpful, in the first instance, to study Table I, which lists the colonies and contrasts their various attributes.

The Contents of Each Chapter

Each chapter starts with a short foreword on the colony as a whole, and is followed by three sections (2, 3, and 4), which deal respectively with the *Physical Description*, the *Coast*, and the *Climate*, and supplement the information of Volume I.

With regard to climate, however, a special warning must be given. Data have not been gathered either in sufficient quantity or with the necessary continuity to warrant firm deduction. Such data as underlie the conclusions reached will be found at the end of this volume. Those subsequent to 1936 are the more reliable. Extracts from them amplify description in each colony. The units which are employed are degrees Fahrenheit, millibars, and inches (of rainfall). Cloud is given in tenths of sky covered, and a rain-day is one with more than 0.004 inch of rain.

Vegetation (Section 5) is a brief local résumé.

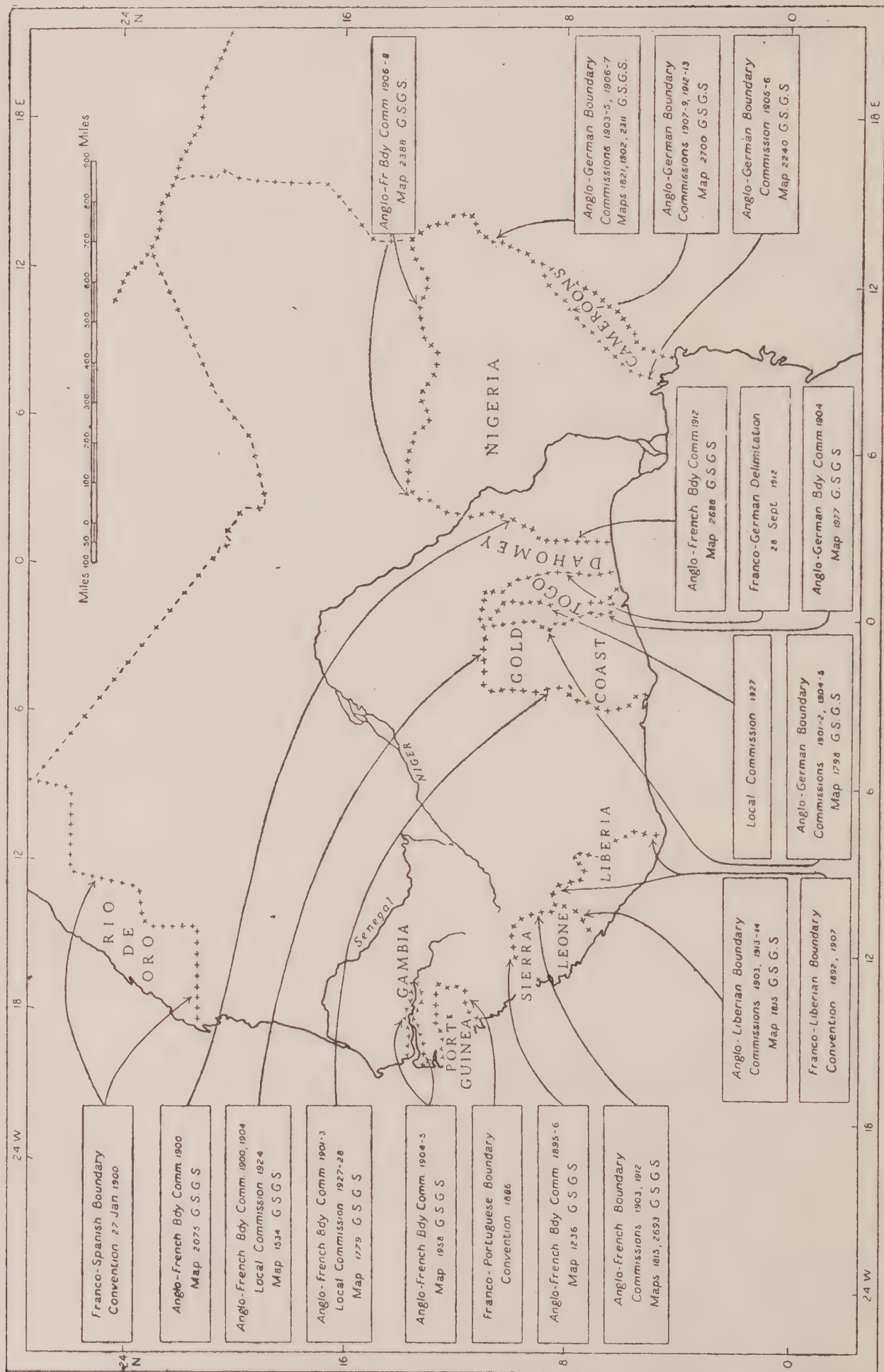


FIG. 1. International Boundaries in West Africa

	Area		Population			Coast-line	Rainfall		Vegetation Zone of Volume I	Agriculture		
	Sq. miles to nearest thousand	Percen- tage of Federa- tion area	To nearest thousand	Density per square mile	Percen- tage of Federa- tion popula- tion		Length parallel to coast in miles	Averages in inches		Zone of Volume I	Crops and livestock described in detail	
								Rainiest area				Driest area
DAHOMY	43	2·3	1,289	29·6	8·2	76	55	30	1. Grass-woodland (Sudan)	Millet	Manioc, yams, maize, oil palm, coconut palm, castor-oil plant.	
FRENCH GUINEA	97	5·3	2,066	21·3	13·1	170	170	50	2. Grass-woodland (Guinea)	Manioc	Bananas, citrus fruits, rice, kola, rubber; humpless cattle.	
FRENCH SUDAN	591	32·0	3,635	6·2	23·1	..	55	0	1. Montane 2. Grass-woodland (Guinea) 3. Casamancian	Manioc	Peas and beans, cotton, shea-butter tree, kapok.	
IVORY COAST	184	10·0	3,981	21·6	25·3	320	90	30	1. Central Saharan 2. South Saharan 3. Thornland 4. Grass-woodland (Sudan)	(Desert) Sub-desert Millet Manioc	Coco-yams, plantains, cocoa, coffee; timber.	
MAURITANIA	328	17·8	371	1·1	2·5	490	30	0	1. Grass-woodland (Sudan) 2. Grass-woodland (Guinea) 3. Forest	Millet Manioc	Dates, gum arabic.	
NIGER	502	27·2	1,810	3·6	11·5	..	35	0	1. Central Saharan 2. South Saharan 3. Thornland 4. Sub-Canarian	(Desert) Sub-desert Millet	Millets.	
SENEGAL (including DAKAR)	77	4·2	1,793	23·2	11·4	293	65	15	1. Central Saharan 2. South Saharan 3. Thornland 4. Grass-woodland	Millet Manioc	Ground-nuts, sisal.	
Togo	22	1·2	781	35·5	4·9	31	60	30	1. Thornland 2. Grass-woodland (Sudan) 3. Grass-woodland (Guinea) 4. Casamancian	Millet Manioc	Tobacco.	

Health is not given a special section, as it is treated fully in Volume I; but certain information about the organization of health services will be found under 'Administration' (Section 9).

Section 6, on the *People*, selects some particular race or political group in each colony in turn, so that all the important tribes of French West Africa shall be described.

History (Section 7) is confined to events of local importance, and is particular, both in subject and in range, rather than general.

Population and Inland Towns (Section 8) is as full as local records permit.

Administration (Section 9) must be treated here at greater length. To describe it fully in each colony would involve tiresome repetition. Common practice is, therefore, summarized below (p. 6), leaving each chapter to amplify, where necessary, in detail.

Ports (Section 10) are, naturally, of small importance where so few harbours exist. Descriptions include little history because, in most cases, to do so would be but to repeat Section 7.

Minerals will be very briefly summarized in Section 11. The whole subject has been treated in considerable detail in Volume I.

Agriculture (Section 12) gives a general picture of the subsistence and economic life of the local agricultural population; but, again to prevent repetition, specific crops are only described once in detail, and Table I shows how these crops are divided between the various colonies.

Commerce and Finance (Section 13) is, necessarily, confined to local matters and is cramped by the inadequacy of colonial reports. In every case only *Commerce Spécial* is dealt with, because the figures for goods in transit are entirely inadequate. Moreover, in writing of finance it is difficult to follow the no doubt logical, but thoroughly unfamiliar, manner in which French colonial finance is portrayed in official reports. Fig. 2 shows the relationship between the £ sterling and the franc from 1921 to 1939.

Communications (Section 14). Itineraries of railways are given and some road details also. African roads approach European standard only in the larger towns. Generally they lack foundation and have seldom been realigned and regraded for fast mechanical transport. They suffer also from fallen trees, swollen streams, and frequent ferries. Nevertheless, a beginning has been made, and where details are known they are given.

The short road itineraries, given later, include distances, in miles, from the starting-point.

Airways are permanent only in so far as landing-grounds or sea-plane bases are concerned. The war has thoroughly changed the pattern of African airways, and, although many good new airfields

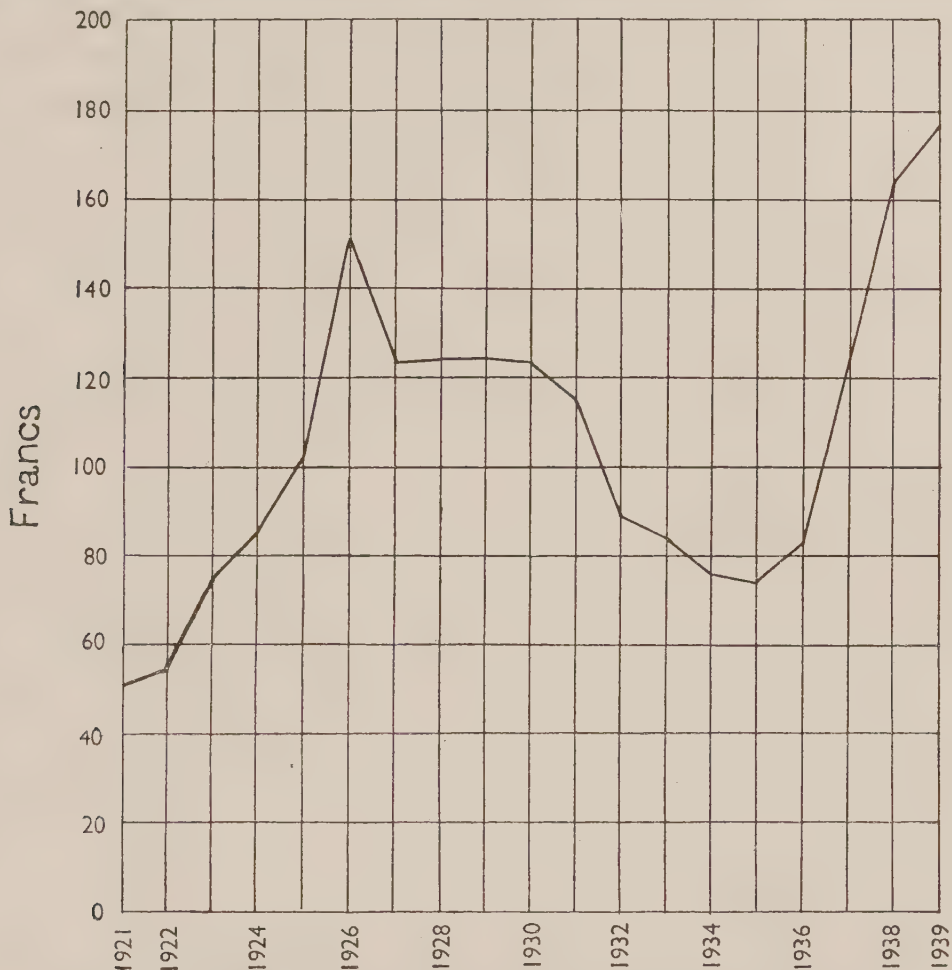


FIG. 2. *Values of the £ Sterling in Terms of the Franc*

have been built, they may not be such as to serve future needs. Few details are given, therefore.

Posts, telegraphs, and telephones are summarized in Table II and are amplified later for each colony.

TABLE II. *Posts, Telegraphs, and Telephones, 1937*

	<i>Senegal and Dakar</i>	<i>French Sudan</i>	<i>French Guinea</i>	<i>Ivory Coast</i>	<i>Dahomey</i>	<i>Niger</i>	<i>Mauri- tania</i>	<i>Totals</i>
Number of Post Offices	60	49	38	51	53	25	15	273
Postal packets (thou- sands) . . . . .	..	..	..	..	..	..	..	5,612*
Telegraph lines (miles)	1,712	4,221	2,186	4,468	1,209	1,631	567	15,994
Telephone lines (miles)	3,436	2,104	578	1,481	1,012	1,476†	567†	10,654
Number of telephone subscribers	2,936	267	275	512	217	75	10	4,292

* Inland postage only.

† Using telegraph lines.

Administrative Details Common to All Colonies

Executive Councils. An executive council must hold two sessions *per annum*, but may meet as often as a governor convenes it. It is a purely advisory body, but it must be consulted on the budget, on changes in taxation, on the disposal of government property, and on concessions. The budget session usually affords the governor concerned an opportunity to review the past year's work and to make prophecies for the future. The subjects included among its members are chosen by electoral colleges. Unless otherwise stated, these colleges are composed of natives who have spent not less than five years in government service, chiefs of provinces and cantons, licensed traders, owners of property, members of the Legion of Honour, and nominees of the governor.

Territorial Divisions. Each colony is divided into provinces (*cercles*), each under a provincial commissioner (*commandant du cercle*). These are often subdivided into districts (*subdivisions*), each under a junior administrative officer (*chef de subdivision*). Many provinces have Councils of Notables. These consist of from eight to sixteen chiefs, or other local worthies, nominated for three years. They are consultative only, but they must be approached by the administrator in charge concerning native taxes, forced labour, trading licences, and local public works.

Citizens and Subjects. French citizens are those of any race who were born French or who have acquired citizenship by naturalization. This class forms a very small fraction of the population everywhere save in Senegal. All other natives are termed French subjects. This distinction is chiefly important in the matter of law and justice. Citizens are justiciable in courts administering French law. There are 19 of these: 6 Magistrates' Courts, 7 Tribunals of First Instance, 5 Courts of Assize, and 1 Court of Appeal. Subjects are justiciable in courts administering native law but presided over by French officials. Tribunals of the First Degree usually sit at the headquarters of provinces or of districts and in each full commune. Tribunals of the Second Degree and Criminal Tribunals sit at the headquarters of provinces, and Colonial Courts of Appeal at colonial capitals. The Supreme Native Court of Appeal sits at Dakar. The composition and powers of all these courts have been given in Volume I, pp. 261-70. Table III gives a summary of the statistics of cases before them in 1937.

Chiefs. Most of the chiefs to-day are either village chiefs or canton

TABLE III. *Law Courts and Cases, 1937*

	DAHOMY		FRENCH GUINEA		FRENCH SUDAN		IVORY COAST		MAURITANIA		NIGER		SENEGAL AND DAKAR		TOGO	
	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal	Civil	Crim- inal
<i>French Law</i>																
Courts of Assize . . .	..	2	..	4	..	2	..	2	..	..	..	0	..	14	..	5
Tribunals of First Instance . . .	134	92	395	310	102	122	424	229	..	..	..	..	2,140	1,355	35	38
Magistrates' Courts . . .	..	..	..	..	126	75	103	81	..	..	43	13	43	69	..	..
<i>Native Law</i>																
Colonial Court of Appeal . . .	20	407	1	218	0	173	1	304	3	41	0	26	4	297	15	79
Criminal Tribunals . . .	..	41	..	38	..	79	..	78	..	15	..	42	..	63	..	36
Tribunals of the Second Degree . . .	..	..	..	..	62	..	30	..	11	..	2	..	197	..	46	..
Tribunals of the First Degree . . .	2,748	2,577	2,866	1,768	4,548	1,793	3,283	1,983	345	251	342	771	3,194	2,762	712	614
Conciliation proceedings before village chiefs . . .	478	..	1,380	..	544	..	661	..	40	..	197	..	1,394	..	900	..

In addition the West African Court of Appeal heard 487 cases and the Supreme Native Court of Appeal 11 civil and 125 criminal cases. It is not possible to give the colony of origin for these. In Senegal Moslem Courts disposed of 1,149 cases, and in Togo Native Disciplinary Courts disposed of 1,759 cases.

chiefs. The village chief, assisted by a council of elders, has to arrest offenders, to protect crops from wild beasts, to keep the village and its surroundings in good order, to report epidemics, to attempt to settle disputes without the intervention of the courts, to collect taxes, and to supervise the work of his village under the communal labour system. He is usually paid with a percentage of the taxes he collects. The canton chief supervises a group of village chiefs, and allots the proportions of taxation, forced labour, and military service among his villages. He is usually of the greatest assistance to his local administrative officer. Where provincial chiefs exist, they are fully listed in the pages below.

Land Tenure. Agricultural concessions play but a small part in any colony. Until a certain stage of development is reached, a provisional concession (*concession provisoire*) confers rights of occupation but not of ownership. Concessions (*concessions définitives*) imply that the lands concerned are the property of the holders. Other lands are immatriculated (Vol. I, p. 273), but a simpler process for subjects is that known as Confirmation of Native Land Rights. The owner registers his title with his provincial commissioner and receives a certificate of title (*livret foncier*). The greater part, however, of the surface of the Federation is not held under any legal title whatsoever.

Labour. Under the forced labour (*prestation*) laws a man may redeem his liability to work by the daily payment (*rachat*) of redemption money. In each colony a Labour Office collects statistics and assists employment, but the figures quoted on later pages for persons in private employment are by no means complete.

Mining Licences. Mining licences are granted under two systems, the Occupation System and the Royalty System. In brief, the main difference between them is that under the former the holders pay fixed dues, under the latter a percentage of their profits.

Future Policy

Early in 1944 discussion on French Colonial Administration in the Consultative Assembly at Algiers foreshadowed changes likely to occur. Broadly, these postulated an extension of indirect rule and a greater local freedom both political and fiscal. Direct colonial representation in the Chamber of Deputies, the inspection service independent of local authority, and the centralized control of trade were freely criticized. Thus changes may occur not only in the administration of the Federation of French West Africa but in the relationship to each other of the colonies which are included in it. Active as

thought, suggestion, and planning are at the present time, these changes will take long to materialize, and it would be idle to attempt to foreshadow their final form. Facts rather than prophecies are the province of this book.

Bibliography

Finally, a word must be said on Bibliography. Volume I has already listed such books as are particularly useful. No general bibliography accompanies this volume, but further references are given under each colony to books of peculiar local value.

CHAPTER II

DAHOMEY

I. GENERAL

Area: 42,243 square miles. Population (1937): 1,289,128. Density per square mile: 29.58. Capital: Porto Novo.

WITH the exception of the District of Dakar, Dahomey is the smallest of the colonies of the Federation. It extends from $6^{\circ} 16' \text{ N.}$ to $12^{\circ} 21' \text{ N.}$ and from $0^{\circ} 45' \text{ E.}$ to $3^{\circ} 51' \text{ E.}$; that is to say, it has an extreme length of some 420 miles and an extreme width of 210 miles, although it narrows to 75 miles in the south.

Boundaries. On the south the colony's coastline is on the Bight of Benin. The boundary with Togo begins 2 miles east of Anecho. It turns inland and then runs east along the lagoons until reaching the Mono river, only 2 miles north-west of Grand Popo. It then follows the main channel of the Mono upstream for some 75 miles. Leaving that river, it continues almost due north as far as a point 3 miles west of Bassila. From there it pursues a generally north-west course to a village 18 miles east of Sansanné Mango. Thence it goes east of north to the Togo-Niger boundary on the Pendjari river, 5 miles south-west of Porga. The right bank of this river is followed almost to 2° E. , and then a ridge of the Atakora highlands as far as the Mekrou at $11^{\circ} 51' \text{ N.}$ and $2^{\circ} 13' \text{ E.}$ The left bank of the Mekrou provides the boundary until its confluence with the Niger opposite Boumba. The main stream separates Dahomey from Niger for the 80 miles to just above Lollo. From there the frontier with Nigeria turns south. At first it follows a winding course, with little regard for natural features. The Oli is crossed 27 miles east-north-east of Nikki and several of its tributaries a little later. The general trend of the frontier is somewhat west of south, running almost due west for a few miles along latitude $9^{\circ} 05' \text{ N.}$; but it afterwards turns sharply south and keeps along the left bank of the Okpara to $7^{\circ} 54' \text{ N.}$ It maintains its southerly direction until it strikes the Adjara 7 miles east-north-east of Porto Novo. For the remainder of its course to its junction with the Ouémé this little stream marks the frontier, after which the latter goes south to meet the sea at $2^{\circ} 42' 30'' \text{ E.}$

Bibliography. Two publications of considerable local interest are:

HERSKOVITS, M. J. *Dahomey*. New York, 1938.

Exposition Coloniale Internationale de 1931. *Le Dahomey*. Paris, 1931.

2. PHYSICAL DESCRIPTION AND GEOLOGY

A low divide lies roughly along latitude 10° . Southwards the country is drained by the Mono, the Cuffo, and the Ouémé and its tributaries to the Bight of Benin: northwards, by the Pendjari to the Oti and so to the Volta, and by the Mekrou, the Alibori, the Sota, and the Oli to the Niger. The only highlands of the colony are found at either end of this divide: on the west, the Atakora highlands, and, on the east, high ground along the Nigerian border south of Nikki.

Southern Dahomey

South of the divide the colony is a rough rectangle, 250 miles from north to south and 75 miles across.

The coastline is formed by a narrow spit of sand separated from the mainland by a depression in which lies a string of marshes and lagoons. Both of these features are described in Section 3.

North of the depression is a low, flat, clay plateau (Fig. 4), often called *La Terre de Barre*, from the Portuguese word *barro* meaning 'clay'. This plateau, Tertiary in origin, is nowhere more than about 500 feet high, and is divided by the Cuffo and Ouémé rivers into three sections which at the end of the rains are almost isolated by floods in their valleys. The higher ground is built up of a horizontally bedded succession of loams and clayey sands, capped by beds of ferruginous sandstones and conglomerates of Upper Eocene age, the lower strata being of marine formation and the upper a continental facies. The rocks have few practical applications, but ferruginous sandstones, worked in quarries near Sakété, yield a building-stone for the town of Porto Novo and for use along the railway, while deposits of quartzose gravel, found in the alluvium of the Mono valley, are quarried at such places as Comé for road-metal and railway ballast. These formations can only be studied along the edges of the plateau or in deep wells, since they are everywhere covered by accumulations of lateritic sands and clays, from a few feet up to 20 yards in thickness. The general effect is one of warmth, and at the drier times of year, after an interval without rain, everything is coated with a layer of red dust. The natural bush vegetation is seldom dense, and much has been cleared for cultivation. The westernmost of the three

areas falls westwards to the rich valley of the Mono, which here forms the boundary with Togo, and eastwards to the Cuffo and Lake Ahémé. This lake averages 2 miles wide, and is 15 miles from north to south. The two other sections of the plateau are separated from each other by the swampy valley of the Ouémé and its tributary the Zou. Both are densely populated and richly cultivated, in spite of the fact that

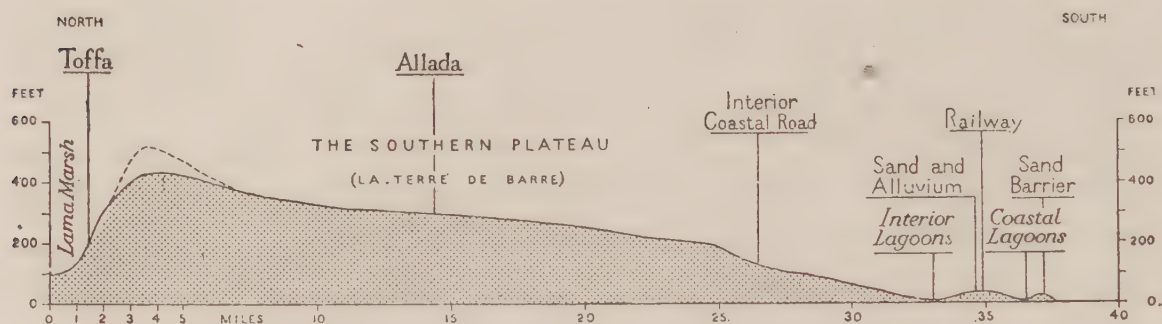


FIG. 4. *Southern Dahomey: A Typical Section*

the water-table is very low and only tapped by deep wells, which average 160 feet in the centre of the Allada district.

Between Parahoué and Pobe is a second west-to-east depression, a flat clay swamp which widens to the east of the Cuffo and is known as the Lama marsh. This region, the level of which often falls to less than 100 feet, is covered by a black fertile soil; but, since the rocks are impermeable and the drainage poor, immense areas are marshy or inundated during every wet season. The marsh is almost impassable at this time, and the Pobe-Porto Novo area is then completely isolated from the rest of the country. It is noticeable (Fig. 3) that both the road and railway northwards from Allada turn along the southern edge of this marshland until they find a convenient place to cross. Even in the drier months its thick growth of tall swamp grasses and reeds makes movement away from the few tracks very difficult.

On the north of the Lama depression there are four low plateaux similar to those on its south, respectively centring on Parahoué, Abomey, Zagnanado, and Ketou and separated from each other by the Cuffo, Zou, and Ouémé valleys. Water-supply is everywhere difficult. The water-table is again low and wells are deep, averaging 200 feet around Abomey. Perennial springs are rare and of small volume, the most important being near Zagnanado at the junction of the sandstone with gneiss.

North of these plateaux the country rises gradually by gentle undulations to the divide along latitude 10° . The rocks are almost

exclusively granite and granite-gneiss, in places with patches of amphibolite, pyroxenite, quartzite, and other old metamorphic formations. Where soil is present it is a sandy clay, usually occupying the low ground; but often the higher granite and gneiss are exposed as a bare rock surface surrounded by scree. The amphibolites and basic rocks are more subject to lateritization, and under the protective influence of the laterite capping may give rise to low hills. A line north-north-west from Abomey would follow the divide between the Cuffo and Zou rivers. West of that line is the basin of the upper Cuffo, which rises in Togo and enters Dahomey at about latitude $7^{\circ} 30' N$. The whole of the rest of the centre and south is drained by the Ouémé and its tributaries, the chief of which are, on the west, the Zou and its affluent the Agbado or Ofeo, which join it in the Lama marsh, and on the east the Okpara, which rises near Nikki and for 85 miles forms the eastern boundary of the colony. All flow north to south, roughly parallel, and their valleys are fertile and well wooded. Since, however, their volume varies and flooding is common, few settlements or roads are to be found actually in the valleys. The intervening spurs are largely covered with laterite, and the rather thin poor soil supports only savanna and open bush. Here and there the rolling surface is interrupted by scarps and tors: the scarp south of Abomey, which marks the end of the spur between the Cuffo and Zou, is sufficiently pronounced to have diverted the railway to Parakou away from the town to Bohicon. The spur between the Zou and Ouémé is more broken, and granite tors, such as those in the Dassas mountains east of Savalou, are frequent. This region across to Savé is fertile and well cultivated, but north of Savé the road and railway to Parakou enter a granite plateau whose thin surface soils can only support stock and the hardier natural savanna products. After the rains central Dahomey quickly changes from the parched browns of the dry season and the scorched blacks and greys left by bush fires to a sea of vivid green.

On latitude 9° , south-west of Parakou, two small hilly areas lie close against the east of the Ouémé. These are the Ouari-Marô hills and the Delcessé mountains, whose highest points rise 800 feet or more above the general level of the plain. East of Parakou the surface is so flat that swamps are common, and to the north-west the headwaters of the upper Ouémé meander widely across a broad and largely uninhabited plain. From it the ground rises gradually north-west to the foothills of the Atakora highlands and north-east to the broken ground round Nikki, and falls almost imperceptibly to the

great plateau of sandstone which, beginning to the north of Banikoara and Zougou, extends along the middle Niger.

Northern Dahomey

The outstanding feature of the colony is the Atakora highlands, which are at the northern end of the Togo mountains and which form a geological entity. This massif is a plateau eroded into a series of discontinuous ridges, alined generally south-south-west to north-north-east, whose highest points rise over 2,000 feet above sea-level. Here and there the schists forming most of these highlands are bounded by escarpments 1,000 feet high. Movement is, therefore, difficult, though the area is crossed by the western of the two north-south roads, that which runs from Cotonou through Natitingou to Fada N'Gourma in Niger. As the typical slaty weathering gives small opportunity for the development of grasses, the country is little subject to bush fires and consequently there is an abundance of tall trees. The highland is drained northwards through the narrow and relatively deep valleys of the Mekrou and the Pendjari. The former is a tributary of the Niger. The latter, after flowing parallel to the Mekrou for nearly 100 miles, doubles back west and then south-west to join the Oti, and so the Volta. Until it passes into northern Togo it forms the boundary with Niger. Its course is sinuous, and its flat valley is widely flooded after the rains. Like the rest of northern Dahomey these north-western plains are covered with scrub and open savanna, which support only the herds of nomads. Settlements are few, except to the west of the Natitingou-Fada N'Gourma road, along the Togo border.

The rest of the north of the colony, except for the Nikki area, is a slightly undulating plain falling slowly to the Niger, to which it is drained by the Mekrou (the northern boundary of the colony), the Alibori, and the Sota. The country on either side of the Parakou-Kandi-Malanville road is fairly well known, but large areas between the Mekrou and the Alibori are still almost unexplored. The pre-Cambrian rocks, of which this area is composed, are overlain by a succession of flat-bedded sandstones of lower Tertiary age, capped by ferruginous lateritic conglomerates and lateritic sands. The soils are poor and there are vast uninhabited regions with relatively little vegetation. Along the river banks are large deposits of quartzite gravel, and there is widespread cultivation here for a few months each year; but at the end of the rainy season the soils dry up to barren sands supporting no more than a few isolated clumps of trees. Here

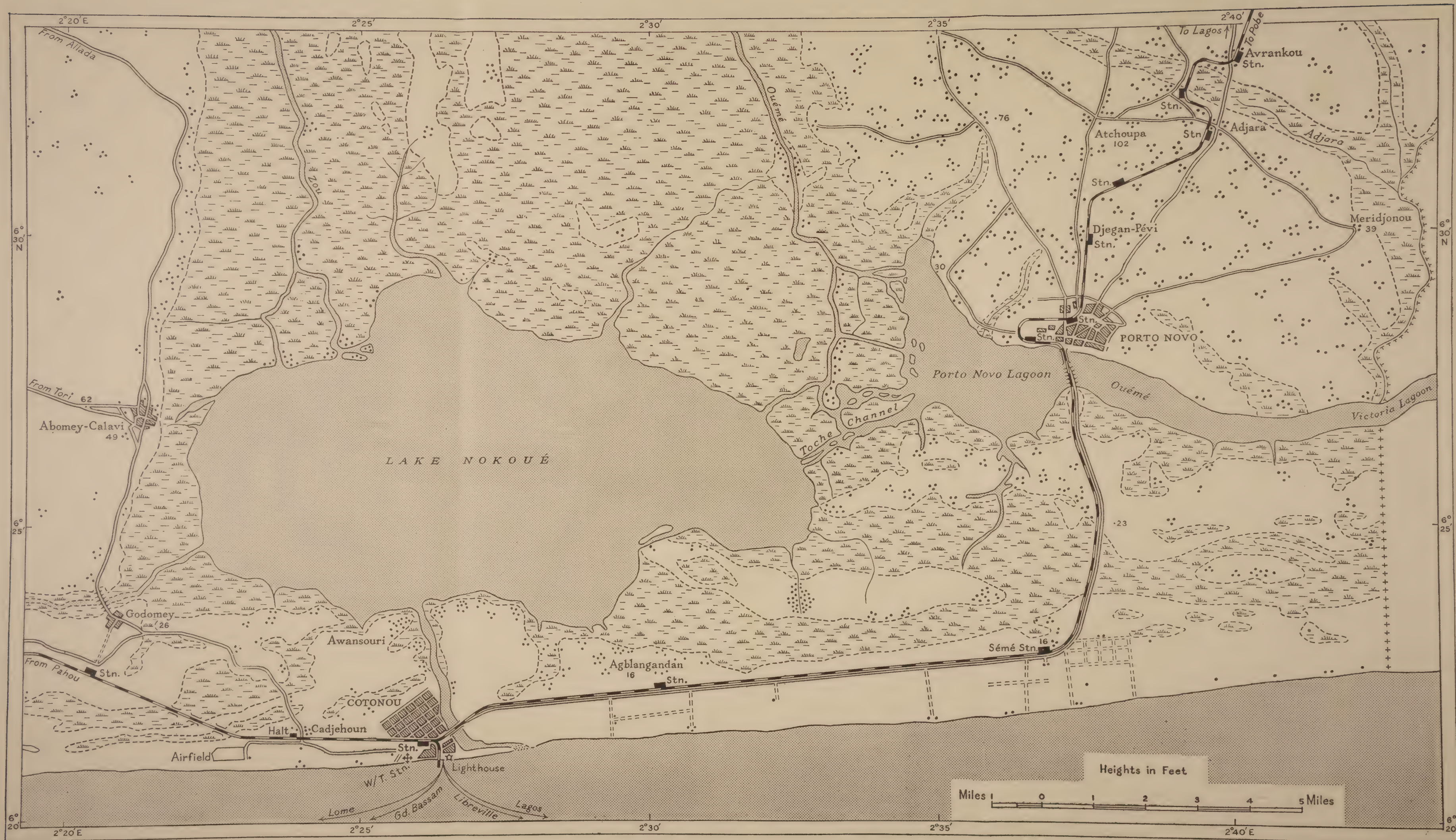


Fig. 5. Cotonou and Porto Novo

and there, as for example south of Bouay, granite tors are exposed. The knot of higher ground round Nikki is more broken, rising at times to nearly 2,000 feet. It is drained northwards by the Sota, southwards by the Okpara, and eastwards to the Niger by the headwaters of the Oli.

3. THE COAST

STRETCHING east, for a little over a degree of longitude, from $1^{\circ} 38'$ to $2^{\circ} 42' 30''$ E., this coast lies on the northern edge of the Bight of Benin. Throughout its whole length the coastline is regular, and the gentle curve of the bight is unbroken by any natural harbours or indentations. The shore is flat and consists of fine white or yellowish sand, nowhere exceeding 15 feet above M.S.L. Behind this sandy barrier, lagoons, wide or narrow, stretch along the whole coast. From the western frontier to Cotonou narrow lagoons, sometimes only 500 yards from the coast, are continuous. Parallel to them and farther inland, other lagoons mark the southern edge of the marsh belt from Grand Popo to the Nigerian frontier. Those from Cotonou eastwards, nearly 6 miles inland, are wide and offer a good waterway to Lagos.

Fronting the sea, the sand barrier drops sharply to the water, and then forms a submarine plateau seawards for 100 yards or so. At about that distance is a small underwater bank, parallel to the coast and about 5 to 6 feet high, over which the surf begins to break. Outside again the level falls slowly to the edge of the continental shelf from 7 to 10 miles from the shore.

The sand barrier itself carries little vegetation other than coconut palms and a few cacti. Villages occur here and there. There is no permanent channel through this barrier between the lagoons and the sea, but there are two which are sometimes open—the *Bouche du Roi* east of Grand Popo, and the outlet from Lake Nokoué at Cotonou.

Inland of the sand barrier ground falls slightly to extensive marshes. The soil begins to change to an alluvial silt. These marshes, the southern of two similar depressions, are 15–20 miles wide on the average, but extend inland for 40 miles along the rivers. The river alluvium (loams, silts, and clays) is here widespread and well cultivated. In this marshy belt lie three large lakes, and through it meander the Mono, the Aho, and the Ouémé rivers.

From the sea not one natural feature is to be seen lifting above the low shore.

Detailed Description

The boundary between Togo and Dahomey reaches the sea 2 miles east of Anecho. There is a custom-house at the frontier. Eastwards the boundary, marked by the centre line of a narrow lagoon, is parallel to the shore, and, on the average, only 2,000 yards from it for 12 miles, till it reaches the river Mono and then turns north upstream. The lagoon, into which the Mono discharges, extends to the Bouche du Roi. Along the sandy barrier runs the road which leads from Accra to Lagos, and the railway is to be extended along the same strip from Anecho to Grand Popo. The village of Agoué, on the coast, is 5 miles from the former. It has a number of huts, some factories, a post office, and a church. Other small hamlets lie along the road, which has a firm, though rough, surface.

One or two minor tracks lead inland from this strip, and, although the country inside the lagoon and therefore in Togo is comparatively free of marsh, it is flat and not visible from the sea.

Grand Popo (p. 63) is 17 miles east-north-east from Anecho, and $1\frac{1}{2}$ miles from the junction of the Mono river with the lagoon. It has no facilities as a port. Eastwards road traffic passes over the Mono by a ferry which may take half an hour to get a car across. The terminus of the 60-cm. railway to Segboroué is just west of the Mono. It is not known whether road traffic can use the railway bridge or not. Half a mile farther north-north-east both road and rail cross a small lagoon by a wood and iron bridge of 70 yards span. Here the road has a good laterite surface. Two and a half miles farther north, at the small village junction of Adjaha, the railway forks, north-north-west to Athieme and north-east to Pagblé. Various minor tracks lead off in the general direction of Athieme, but the road continues north-east to a fork, south of Comé. One branch continues north-north-east along the western shore of Lake Ahémé; the other leads eastwards, as does the railway, to pass south of the lake. Four and a half miles from Comé both road and rail pass over the Aho, a swampy outlet from the lake, on an embankment, very liable to flood, which ends in a wood and iron bridge of 100 yards span. Then, turning north-north-east, both make for Segboroué, a fair-sized native village with a church. At Segboroué the road, the surface of which is here good, turns east-south-east for Ouidah, $8\frac{1}{2}$ miles away, whilst the 60-cm. railway ceases and a metre gauge, to Pahou, begins.

Along the coast, eastwards from Grand Popo, the narrow lagoon continues only 500 yards or so from the sea. The Bouche du Roi,



1. *Awansouri*



2. *Off the coast of Dahomey*



3. *Fon priestesses*

a shifting and often closed channel from the lagoon to the sea, lies a mile or two east of the town. There are a few native hamlets on the sand barrier, but without made intercommunication. Ten miles from Grand Popo the river Cuffo finds its way as the Aho through the marshes to the lagoon. Between the lagoon and the coast road is a strip of marsh about 5 miles in width.

Ouidah (p. 64) is 3 miles from the sea, on the landward side of the coastal lagoon. Ouidah-Plage, 13 miles along the beach from Grand Popo, is its sea suburb. The two places are connected by a road which crosses the coastal lagoon on a causeway. From Ouidah, which is on the railway and the main coast road, tracks radiate east, north, and west through flat and fertile country.

A fair, but seasonal, road runs north-north-west to Domé, on the east shore of Lake Ahémé. The more important coast road leads north-north-east for 15 miles to Tori station, where it crosses the main line from Cotonou to Parakou. The surface is of laterite and fairly good. Turning eastwards the road makes for Abomey-Calavi, on the west shore of Lake Nokoué, and then turns south for Cotonou, 25 miles from Ouidah. At Tori station a branch forks north to Allada. Much of this inland portion of the coast road is over higher ground, and, although the surface is good in dry weather, it is apt to get washed away in the rains. It had always been intended to complete a coastal road between Ouidah and Cotonou, and such a road, actually shown on a 1942 map, is undoubtedly in existence, but there is no evidence as to its surface.

The coast continues flat and even from Ouidah-Plage to Cotonou, 42 miles from Grand Popo. One hamlet—Avrécété—8½ miles from Ouidah-Plage, is conspicuous. A small but continuous lagoon runs parallel inside the sand barrier. Inland, the railway is between 2 and 3 miles from the shore. Nine miles east from Ouidah the railway junction of Pahou marks the point at which the metre-gauge line from Parakou, in the north of the colony, joins the coastal line. Just north of the coastal railway is a navigable lagoon which continues west to within 6 miles of Lake Ahémé and eastwards to Lake Nokoué. This lagoon is the end of a continuous lake and lagoon waterway to Lagos harbour. Nine miles north of Pahou ground rises to a plateau, but the general low marshy levels continue north on either side of this feature. Ten miles east of Pahou is the railway station of Godomey. Godomey itself, a mile to the north, is at the south-west corner of the Lake Nokoué marsh. Through it passes the road from Abomey-Calavi which continues to Cotonou. The road is banked,

but is liable to flooding. The railway (Fig. 5) approaches to within a mile of the coast before reaching Cotonou.

Cotonou (p. 65), the chief port and commercial centre of Dahomey, owes its recent growth to the railway which now connects it to Porto Novo. The town stands at the sea end of a channel which sometimes takes the overflow from Lake Nokoué. The channel has to be dug free during flood times, but often closes, and not even small craft can then pass it.

Lake Nokoué, 3 miles north of Cotonou, is about 12 miles long from east to west and 6 miles from south to north. From its south-west corner leads the Ahouangan lagoon, which provides the western extension of the coastal waterway. Both the lake and the lagoon are 5 feet deep in the dry season. There is much canoe traffic, and fishing is an important industry. Round the marshy shores, and on the swamp which continues 15 miles north of the lake, natives live in pile huts. From its eastern shore Toche channel, less than 7 feet deep, leads eastwards to Porto Novo lagoon and the mouth of the Ouémé.

Eastwards from Cotonou the railway passes over a long iron and concrete bridge across the outlet from Lake Nokoué, and continues along the sandy barrier. Road traffic crosses by the same bridge, and the road, broad and well surfaced, continues to Porto Novo. A little scattered bush, many palms, and one or two native hamlets lie on the barrier, and $12\frac{1}{2}$ miles from Cotonou the railway turns north at the village of Sémé. Seven miles north the railway and road cross the lagoon to reach the town of Porto Novo. The bridge is of concrete and iron.

Porto Novo (p. 67), the capital, stands on the north-eastern corner of the lagoon 5 miles from the Nigerian frontier. Near the town the lagoon is 1–2 fathoms deep and is used as a seaplane base. The Ouémé is the most important river of Dahomey. It flows by several branches into the western end of Porto Novo lagoon, thence parallel to the coast for 50 miles, and into the sea at Lagos. It is navigable in the rainy season for small launches as far as the railway bridge west of Savé. In the dry season small boats can get up to Adjohon, 25 miles from the coast. Close north of Adjohon the river forms a delta, the largest branch of which—the Zou—flows into Lake Nokoué. North of the lagoon the country remains flat, cultivated, and heavily settled; through it the railway runs northwards to Pobe. The coast road runs north from Porto Novo and, short of Sakété (20 miles), turns east, with a rough and stony surface, for Lagos. Five miles east

of Sémé is the frontier between Dahomey and Nigeria, and 6 miles to the north the Ouémé, flowing through Victoria lagoon, receives the waters of the Adjara. East of this point the lagoon narrows to Lagos, nearly 50 miles east. Off Badagri, 10 miles east of the frontier, it is a quarter of a mile wide and there is anchorage in 16 feet. Off Porto Novo the depth varies from 10 to 30 feet. The Ouémé waterway used to carry much of the trade of Dahomey, but the new railway to Cotonou is now absorbing most of it. In the last thirty years the total of waterborne trade to and from Lagos has fallen to a tenth of its original value.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	<i>Latitude N.</i>	<i>Longitude E.</i>	<i>Altitude in feet</i>
Guéné . . .	11° 44'	3° 17'	705
Kandi . . .	11° 07'	2° 57'	1,004
Natitingou . . .	10° 16'	1° 23'	1,522
Bembéréke . . .	10° 11'	2° 42'	1,312
Djougou . . .	9° 39'	1° 46'	1,450
Nikki . . .	9° 35'	3° 18'	1,148
Tchaourou . . .	8° 54'	2° 36'	1,071
Savé . . .	8° 02'	2° 30'	656
Savalou . . .	7° 56'	2° 03'	709
Zagnanado . . .	7° 17'	2° 25'	390
Abomey . . .	7° 12'	1° 59'	787
Pobe . . .	6° 56'	2° 40'	397
Porto Novo . . .	6° 28'	2° 37'	76
Cotonou . . .	6° 21'	2° 26'	23
Grand Popo. . .	6° 17'	1° 55'	13

THE climate of the south of the colony is almost equatorial, for, although the rainfall of about 50 inches is unusually small, the double maximum of rain is typical, while the temperatures by day and by night and the relative humidity are always high. In the north, on the other hand, there are two distinct seasons: the one dry, from November to April, with very dry, dusty, north-east winds and a wide range of temperature, and the other wet, with south-west winds, more cloud, rain, and thunder, and lower day temperatures with a smaller daily range.

Meteorological data are largely lacking, and those that are available are often incomplete.

Pressure (Fig. 58)

In January the trough of the equatorial low-pressure belt lies just to the south of Dahomey. In July it has moved north of the latitude

of Timbuktu. In January, therefore, there is a gradient of 2 mb. from 1011 mb. in the north to 1009 mb. in the south. In July the gradient is reversed, and while the north still records 1011 mb., the coast shows 1014 mb. At the intermediate periods pressure is more or less even throughout the colony, averaging 1009 mb. in April and from 1010 to 1011 mb. in October.

TABLE I. *Mean Daily Pressure (1000 + millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Natitingou . . .	11	10	09	10	10	13	15	14	14	13	12	12	12	6
Tchaourou . . .	11	09	08	09	10	12	13	12	12	11	10	09	11	5
Pobe . . .	10	09	09	09	10	13	14	13	13	11	10	10	11	5
Cotonou . . .	09	09	09	09	10	13	14	13	13	11	10	10	11	5

Diurnal changes are of the order of 2 or 3 mb. in the south, and are probably slightly greater in the north. Maxima occur at 10.00 a.m. and 10.00 p.m., and minima at about 4.00 a.m. and 4.00 p.m. Irregular variations are uncommon and inconsiderable, except during tornadoes.

Winds (Fig. 23)

Surface Winds. Since the winds over West Africa are south-westerly (the monsoon) on the south side of the equatorial low-pressure belt, and north-easterly (the harmattan) on its north, it follows that the surface winds over southern Dahomey are chiefly from the south-west, while over the north of the colony there is an alternation of south-west and north-east winds as the low-pressure belt moves north and south.

The monsoon, with its high humidity, cloudiness, and rain, is dominant along the coast all the year (Fig. 6). From November to February it is light, and for short periods it is interrupted with marked results by the harmattan, which makes the mornings seem fresh and the nights quite cold. For the rest of the year, however, 70 per cent. or more of readings are from the south-west, and the strength of these winds frequently exceeds the mean of 8-12 m.p.h. As latitude increases, the duration of the monsoon decreases, and there is a corresponding increase in that of the harmattan. At Natitingou there are normally four or five months, from November to February or March, when the latter is dominant. Calms are less common during these months, but in the rest of the

year they increase (in some months to over 50 per cent. of readings), while south-west winds make up most of the rest of the observations. Over the north of the colony the monsoon loses much of its strength, and its speed is normally only from 5 to 10 m.p.h.: on rare occasions

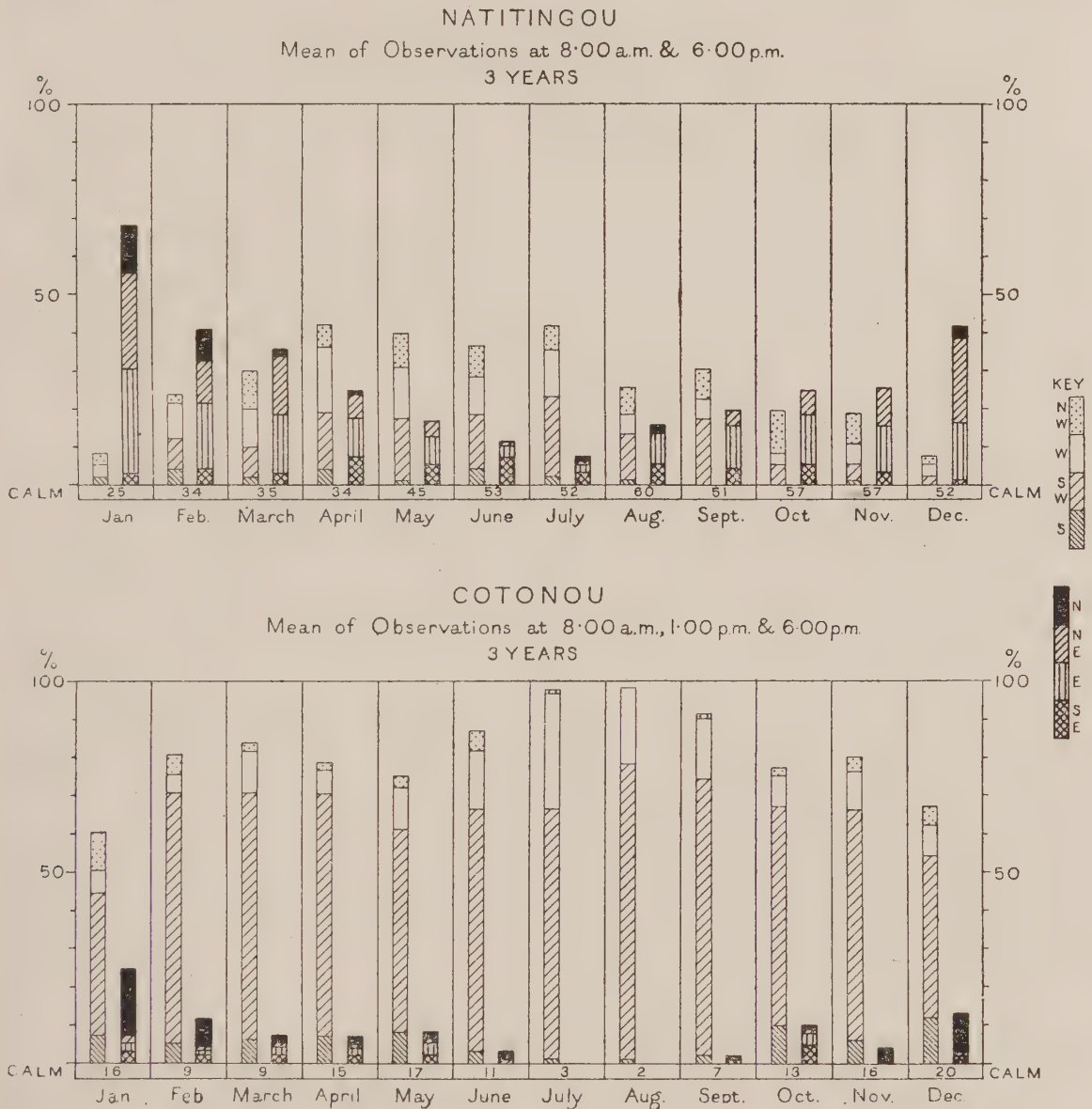


FIG. 6. *Dahomey: Surface Winds*

a force of 30 m.p.h. may be registered. In the extreme north the harmattan is dominant for eight or nine months, and the monsoon, even in August, is never firmly established.

Both the harmattan and the monsoon are shallow and wedge-shaped. The former is deeper to the north and the latter to the south. In January neither current is found above about 3,000 feet, but in July the monsoon, though still the same depth over the north of the colony, is about 10,000 feet deep over Cotonou.

Along the coast a land-breeze is common at night. Before 10.00 a.m. it is replaced by a sea-breeze. In the dry seasons this sea-wind may be felt as far inland as Zagnanado, and develops even when the harmattan is most strongly established, bringing with it a welcome freshness. In the wet seasons it serves merely to increase the strength of the monsoon since its direction is the same, and it is responsible for the very strong wind which often rises about sundown.

Violent squalls are common along the margin between the harmattan and monsoon, and therefore usher the rainy season both in and out. These tornadoes are most common in the south in April and May, while a second maximum occurs in October and November. In the north they are common at any time between April and October, the length of the season and their frequency decreasing northwards. Heavy rain almost invariably accompanies the earlier tornadoes, but those which occur after the rains are often dry.

Upper Winds. Above the surface currents and the land- and sea-breezes are easterly winds. In January their upper limit is from 10,000 to 15,000 feet over northern Dahomey and from 20,000 to 25,000 feet over the coast—that is to say, they are wedge-shaped in section from north to south, thinning northwards. In July they extend to very great heights, certainly to 30,000 feet, over the whole territory. Daily and even hourly variations in these levels must be expected at any time of year. The speed of this current rarely exceeds 15 m.p.h., but very high speeds may be met with on occasion in the higher levels. Haze is normal, but clouds are few.

Light westerly winds are found above this easterly current. Their base is often marked by cirrus, and their humidity is normally greater than that of the easterlies.

Rainfall, Cloud, and Thunder

Rainfall (Fig. 53). As in the other West African territories, the wet and dry seasons are well defined, but they differ markedly in the south and in the north.

In the former there are four seasons, two dry and two wet. The months December to February are dry with about 1 inch of rain and less than five rain-days each. As the monsoon strengthens, rain increases and the first and main wet season is from April to June or July. The rainfall in June at Cotonou is equal to half the annual total for south-eastern England and causes widespread floods. August sees a short drier period before the second wet season from September to November. Most rain falls in violent storms, which are especially

TABLE II. *Mean Rainfall*

R = Rainfall in inches. X = Maximum fall in 24 hours. D = Number of rain-days.

Station	Yrs. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Guéné	10	R X D	0 0 0	0.02 0.20 0.1	0.11 0.47 0.6	0.83 0.87 2.1	3.70 1.97 6.3	5.73 2.48 8.5	8.50 4.29 10.1	12.00 6.18 12.1	8.20 4.21 11.0	0.93 1.98 1.5	0.15 0.83 0.2	40.23 6.18 52.5
Kandi	9-10	R X D	.. 0.04 0.1	0.07 0.24 0.4	0.30 1.46 0.9	1.27 1.77 3.1	3.97 2.14 7.5	5.37 2.31 9.0	7.09 2.54 12.1	9.37 3.55 14.4	6.81 2.76 12.7	1.50 2.21 3.9	0.04 0.26 0.1	35.79 3.55 64.2
Natitingou	10	R X D	0.04 0.40 0.1	0.20 0.71 0.5	1.35 1.67 2.9	2.24 1.49 6.6	5.34 3.54 9.9	5.91 2.05 10.8	10.28 4.29 13.6	8.87 3.32 14.2	11.07 3.35 17.8	4.26 1.89 9.6	1.41 2.26 2.6	51.09 4.29 88.8
Nikki	10	R X D	0.05 0.21 0.4	0.43 1.93 0.8	1.33 3.54 2.3	3.09 2.91 5.7	6.14 3.94 8.0	7.31 3.27 10.4	9.13 7.19 10.7	11.50 4.81 13.4	10.45 6.65 13.9	3.12 3.34 5.1	0.55 1.42 1.1	53.18 7.19 72.1
Djouguou	10	R X D	0.12 0.71 0.4	0.37 1.18 0.8	1.85 1.65 3.3	3.43 2.42 5.8	5.28 2.37 8.9	5.80 2.61 10.5	10.98 3.88 14.1	10.74 3.74 15.2	11.10 6.58 14.1	3.90 3.70 6.8	0.23 0.77 0.7	54.20 6.58 80.8
Tchaourou	3-4	R X D	0.02 0.05 0.7	0.60 0.77 2.3	1.89 1.80 4.0	3.50 1.49 6.3	6.40 3.66 12.7	8.90 3.50 16.7	4.28 1.59 13.0	6.88 3.86 15.3	8.53 2.80 19.0	3.10 1.21 12.2	0.44 0.76 2.0	44.74 3.86 105.0
Savalou	10	R X D	0.50 1.24 0.8	2.39 7.01 2.1	2.68 2.70 4.0	4.57 3.31 6.4	6.03 4.45 10.5	7.15 4.13 9.7	7.37 3.87 8.5	7.30 4.27 8.8	5.62 1.95 10.4	5.39 2.30 9.6	1.41 1.77 2.5	50.91 7.01 74.0
Pobe	10	R X D	0.71 3.15 1.2	0.90 1.97 3.0	4.43 2.69 8.3	6.68 7.56 9.2	6.93 2.91 12.3	8.16 3.82 16.1	5.38 4.22 11.3	2.54 2.52 7.0	2.59 2.13 11.8	5.47 2.66 13.3	2.32 1.48 6.7	48.64 7.56 102.0
Porto Novo	10	R X D	0.96 3.31 1.9	0.90 1.24 2.3	3.17 2.60 5.2	5.43 3.75 7.7	7.56 3.88 10.5	10.46 4.38 12.7	5.28 3.39 9.4	1.81 1.83 6.2	4.71 2.40 10.1	6.59 3.07 11.6	4.30 7.14 7.5	52.22 7.14 87.2
Cotonou	10	R X D	1.33 3.25 1.8	1.35 3.38 3.3	4.58 2.96 5.9	4.90 4.53 8.4	10.04 6.02 12.8	14.47 6.65 14.6	3.55 3.31 9.6	1.49 2.17 5.1	2.65 2.29 8.8	5.30 4.53 11.2	2.34 1.30 7.4	52.46 6.65 91.2

heavy in April and May, when they often accompany tornadoes, and in October. The rain of June and July is more persistent, but monthly totals are variable. Thus, at Cotonou the July fall, only 1.0 inch in 1937, was 8.7 inches in 1939, while the figures for October were respectively 5.9 inches and 0.5 inches.

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Kandi . . .	96	100	104	105	98	92	88	87	90	95	98	97	96	18
	65	66	74	76	75	73	72	72	71	72	67	64	71	12
Natitingou . . .	88	91	93	92	87	84	81	80	82	84	87	90	86	13
	70	72	75	76	74	72	71	70	70	70	69	68	71	8
Tchaourou . . .	94	99	98	95	92	88	85	84	86	88	92	94	91	14
	66	69	71	72	71	69	69	68	69	69	67	65	69	7
Pobe	94	97	97	95	92	88	84	85	87	90	91	93	91	12
	72	73	74	73	73	70	70	69	71	71	72	72	72	5
Porto Novo . . .	92	93	93	93	90	86	83	83	85	88	91	92	89	10
	73	75	75	74	73	71	72	70	76	73	73	73	73	6
Cotonou	89	90	92	89	90	86	84	84	85	87	88	89	88	8
	76	78	78	77	76	74	74	73	74	75	75	76	75	5

TABLE IV. *Mean Relative Humidity (percentages)*

Two observations: 8.00 a.m. and 6.00 p.m. Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Natitingou . . .	46	56	65	73	82	86	89	91	90	86	75	58	74.8	45
	44	52	54	62	75	79	85	87	88	84	69	53	69.3	44
Tchaourou . . .	69	75	77	83	86	90	92	92	92	90	86	81	84.4	23
	31	32	44	55	60	69	73	74	71	66	46	36	54.8	43
	38	35	45	63	70	77	82	84	85	84	69	50	65.2	50
Pobe	88	89	86	85	85	87	89	87	88	88	91	91	87.8	6
	66	66	69	74	82	86	86	82	84	84	82	77	78.2	20
Porto Novo . . .	88	87	85	85	85	89	87	87	87	86	88	88	86.7	4
	82	82	81	83	84	86	87	86	87	87	87	84	84.7	6
Cotonou	90	88	85	83	86	90	88	88	88	87	88	91	87.7	8
	68	70	69	70	74	78	77	76	76	75	74	71	73.2	10
	81	82	82	82	82	86	87	87	88	85	84	82	84.0	7

The coast forms part of the stretch of strikingly low precipitation from Cape Three Points to Lagos, and rainfall decreases westwards. While Porto Novo has 52 inches per annum, Grand Popo has no more than 32 inches.

Rain is less and lasts over a shorter period as one goes farther north. In the latitude of Natitingou the wet season sets in with violent

storms during April, is at its height during July and August, which months each have some 10 inches of rain from about 15 rain-days, and ends in storms during October. The rain falls in relatively short heavy showers. Even at the height of the season, several fine days separate one rain-day from another. In the extreme north of the colony the wet season starts as late as May and lasts only for five months.

Cloud. Yearly and daily variations in cloud are greater in the north than in the south, although nowhere are they large. At all seasons cloud cover is greater a few miles inland than along the coast. Clouds are few in the harmattan, when the average in the north is 2-4 tenths of sky covered, and on the coast 6 or 7 tenths in the morning and 4-6 tenths in the evening. They increase everywhere in the wet season. For several months in the south there is an average of 7-9 tenths, and in the north the mean for July and August is 7 or 8 tenths in the morning and 5 or 6 tenths in the evening.

The commonest clouds are cumulus, which form in the higher levels of the monsoon. Rain comes with cumulo-nimbus, and when it is heavy the cloud base is often only a few hundred feet above ground level.

Thunder. Thunderstorms, most frequent as an accompaniment to tornadoes, show two maxima in the south and one in the north, roughly corresponding to the rainfall. The north is the greater sufferer, and from May to October the atmosphere is highly charged with electricity.

Temperature and Humidity

In the south, continuous high temperatures and relative humidity are very trying and unhealthy for Europeans. The greater variations in northern Dahomey make it much healthier, especially in the dry season.

Temperature. Throughout the colony maximum temperatures, highest about March, decrease with the onset of the rains, and fall steadily to their lowest point in August. In the south variations are small. Mean daily maxima lie between 80° and 90°, while minima are between 70° and 75°, or about the same as the average daily maxima of a London mid-summer. In the north the daily range during the rains is much the same as in the south, but in the dry season approaches 25°. At midday the thermometer will read between 90° and 100°, but nights, with screen temperatures falling to 60°, are relatively refreshing.

Humidity. The remarkably consistent humidity of the coastlands referred to at the beginning of this section is well shown by the records at Porto Novo in Table IV. There is little connexion with the rainfall, though there are slightly lower figures in the first months of the year. Heavy dews are common.

In northern Dahomey readings at the end of the wet season are similar to those on the coast, though the daily range is greater, since the storms which moisten the air are of short duration. In the dry season vapour pressure is very low. A relative humidity of 50 per cent. in the morning and of 40 per cent. in the evening is normal. Even drier conditions obtain when the harmattan is blowing strongly.

Visibility

Statistics for Cotonou suggest that visibility along the coast is good on the whole. For 1936 and 1937, 75 per cent. of the morning (8.00 a.m.) readings gave visibility at $2\frac{1}{2}$ – $12\frac{1}{2}$ miles, and 15 per cent. at $12\frac{1}{2}$ –31 miles; 90 per cent. and 80 per cent. of the readings were at $6\frac{1}{4}$ –31 miles respectively for afternoon (1.00 p.m.) and evening (6.00 p.m.). Poor visibilities of less than half a mile are almost all recorded in December and January, in which month fog is prevalent in the mornings over swamps and lagoons, especially when the harmattan intervenes. Temporary but sudden deterioration is to be expected at other times of the year from rain.

The harmattan, as elsewhere in West Africa, carries fine dust and brings haze. Such conditions are experienced in southern Dahomey for short periods in December and January, and more generally in the north at any time during the dry season. As one writer puts it, 'the air is filled with impalpable dust through which the sun shines as if through frosted glass, and the effect is distressing both to man and beast'. Bush fires are common early in the year, and cause local, but intense interference, while tornadoes at the beginning and end of the rains reduce visibility to a few hundred yards.

In the dry season haze may extend to great heights, since the easterlies also carry dust. In the wet season their dust will often account for a hazy belt above the clear surface layers of the monsoon.

Swell and Surf

Swell (Appendix II) is almost invariably from a southern quarter and more usually from the south-west than the south-east. It is normally slight or moderate, and is only heavy when the monsoon is

well established. Days with no swell are fairly common except at this season.

Surf is heavy all along the coast, and heavier to the east. It has thrown up a dangerous bar and is a severe handicap to the landing of goods by lighter.

Meteorological Services

The main meteorological stations are at Cotonou, Porto Novo, Pobe, and Natitingou. All are well equipped to take surface readings, and upper air records have been kept over the last few years at Cotonou and Tchaourou. Information from Cotonou and Natitingou, as well as from Abomey, Bembéréke, Kandi, and Savé, is included in the synoptic reports from Abidjan. There are 16 stations, in addition to those quoted in Table II, recording details of the rainfall.

5. VEGETATION

DAHOMY does not provide the climate in which the typical rain-forest flourishes. There are patches of mixed deciduous forest and there are fringing forests, both of which exhibit some of the characteristics of the rain-forest, but, broadly speaking, this last is absent. Another peculiarity is the large area of marshland, often flooded, which stretches from Pobe along the northern edge of La Terre de Barre nearly to the Togo boundary. A dense secondary brushwood covers this area. The whole of the rest of the colony comes in the grass-woodland zone, the southern and larger part being in the Guinea subzone and the northern in the Sudan subzone.

Along the coast mangroves are not common. Here again the lesser rainfall is against them. The herbaceous strand communities are less in evidence than along the Ivory Coast. On the sandbanks and shores of the lagoons grow areas of scrub in which screw pines and spiny date palms appear here and there. The south of Dahomey is well and heavily cultivated. Maize and other arable crops alternate with groups of oil palm.

Near Sakété and northwards there are areas of impenetrable brushwood covering fields under fallow, and quickly growing soft-wood trees, notably flat-crown trees (*Albizia*), grow amongst it. In depressions not used for cultivation there are occasional patches of closed forest with tall trees of the real rain-forest type—species of

Chlorophora, *Antiaris*, *Alstonia*, *Triplochiton*, *Irvingia*, and others. These may be traces of a former and more continuous forest. This area is, however, the Lama marsh. In the rainy season it is mainly under water, whilst in dry weather the black soil dries and cracks. Over the greater part of this large stretch of country, secondary brushwood of shrubs and intermixed lianes grows thickly and is almost impenetrable. The most typical species are a spiny acacia (*Acacia campylacantha*), and, though less common, a legume (*Lonchocarpus* sp.). Native hunters have asserted that there are, in the Lama marsh, certain high forests accessible only in the dry season. In the north-west the swamps are cultivated by raising mounds and ridges.

North of the Lama marsh grass-woodlands recommence, and extend northwards roughly to the latitude of Djougou. In this area of forest remnants there is evidence of original and relatively closed high forest, though probably of a mixed deciduous type. Fringing forests are well developed and contain such forest species as the broad-leaved mahogany (*Khaya grandifoliola*), many other trees and shrubs, and woody climbers partly of rain-forest type, partly savanna, and partly peculiar 'ripicole' species not found elsewhere. There are, too, isolated patches of forest which bear witness to a vegetation differing from the general grass-woodland of to-day. Sometimes these remnants cover areas of soil deeper and moister than the average, and sometimes they surround hidden villages. In such cases they have been preserved partly for security and partly to shelter the spirits of the dead. These forest islets are particularly prevalent between Savalou and Djougou. Everywhere, however, man has been able to destroy and to deforest. Outside the fringing and islet forests the common trees are all such as can resist fire. They are nearly all mutilated and badly formed, whilst most are old, for seedlings and suckers rarely survive. There are probably over 150 species of tree characteristic of this area. In the south of this Guinea subzone the dominant grass is *Pennisetum purpureum* (elephant grass) growing to a height of 12 feet.

The northern half of the Guinea subzone still gives the impression of being well wooded, but this fact is almost entirely due to two trees, the 'Sau' (*Berlinia doka*) and the 'Kosan' (*B. dalzielii*). These two trees, from 45 to 60 feet high, with erect trunks, cover large areas, and although sometimes mixed with others, are always dominant. They grow on poor and even on rocky soils, multiplying by suckers, and spread thickly over the small rocky uncultivated hills as far as

Kandi, thinning out but still very evident north of that place. Under their thickish canopy grass is open and patchy, although fires pass over every year. On the richer and moister soils the *Anogeissus schimperi* replaces the 'Sau'. The 'Somon' (*Uapaca somon*), a member of the spurge family, is also found in the small clumps, with thick foliage persisting through the dry season.

The Sudan subzone which stretches to the northern frontier is, for the most part, terribly deforested. Members of the family Combretaceae (species of *Combretum*, *Terminalia*, *Guiera*, and *Pteleopsis*) are common in the zone, and with them, particularly in the drier areas, grow small clumps of acacias. The silk-cotton tree (*Bombax buonopozense*), with its generally red, but sometimes yellow or orange, flowers is also common. The shea-butter tree (*Butyrospermum parkii*) is relatively abundant, since it is deliberately preserved by the natives. Poor soils, and, even more, the destructive activities of man, enhance the poverty of the vegetation of this zone. The dominant grasses of this area are members of the Andropogoneae tribe.

6. THE PEOPLE

FONS

THE most numerous and most interesting people in the colony is the Fons. Not only do the men of this race form more than half the native population, but also they preserve, as far as they can, the ways of life of their warlike and famous ancestors.

Physical Characteristics

The Fons have all the physical characteristics of true negroes. They are sturdy, rather above the average height for their race, with flat noses, low foreheads, somewhat square faces, deep-set eyes, and dark chocolate skins tinged with yellow and dull purple.

Political and Social Organization

The Kingdom of Dahomey. The organization of the old kingdom of Dahomey is described below (pp. 37-40), and to-day the country is governed in the normal French manner. Nevertheless, the old traditions die hard. Members of the royal family are still treated with the utmost respect by their social inferiors, and most of the French chiefs are drawn from it or from the old aristocracy.

The Sib, the Clan, and the Family. In addition to the familiar organization into families and clans, there are also extensive patrilineal sibs. Each of these is composed of many clans and comprises a large number of individuals. Its component families do not all live in the same place, but are scattered about the country. Each sib has an ancestral compound, which is occupied by the oldest living male and his family. This sib-chief holds in trust the ancestral palm-groves, fields, shrines, and burial-places, as well as controlling his own personal possessions. On his death he is succeeded by the then oldest living male, who in turn comes to live at the old home. This may mean, for example, that an inhabitant of Ouidah whose sib originated in Abomey has to move from the former place to the latter. The method of succession results, of course, in a short tenure of office by any one man. The extent and complication of the sib relationship is witnessed by the existence in the Fon language of words to express kinship to the sixth degree.

The sib-chief is thought to be the link between the living and the dead members of his sib. In making a decision he is advised by a council composed of his contemporaries, both men and women, but in theory his power is almost absolute. When the oldest of these women is older than the sib-chief himself, her words are accorded great respect and her counsels are very seldom rejected.

At the present time there are some thirty-nine Fon sibs, each with its own deified founder and its own myths, customs, and taboos. New sibs are occasionally formed by secession from old ones which are considered to have grown too large.

Marriage. There are thirteen different categories of marriage, six in which the control of the children is vested in the father and seven in which it is vested in the mother. Otherwise Fon marriage follows the usual negro pattern.

Huts and Compounds. A compound is the residence of a family and consists of a group of buildings surrounded by a wall. These buildings are individual houses for the head of the family, for his brothers and sons who live with him, for the adolescent boys, for the worship of the ancestors, and for storage, besides those for each wife and her children. The ordinary hut is rectangular and made of dried mud with a thatched roof. The front wall of the hut is usually set back somewhat so that, under the overhanging eaves, the woman who lives there has a shady place where she can do her household tasks or gossip with her friends. Her daughters live with her until they are married, but her sons only until they reach adolescence.

Then they are formed into a group and build a communal group-house; even so, they come to their mother's huts for meals.

In the days before the conquest the height of the compound walls was an indication of the rank of their owners. The walls of ordinary families' compounds were from 5 to 7 feet high, but royal palaces had walls which towered 20 or 30 feet from bases 10 or 12 feet thick. Inside a compound the houses are well spaced, and the larger compounds are divided into a number of courtyards. Here again, the royal palaces provide the finest examples. Between each compound, except in the cities, is a space of cultivated ground, and the reddish walls make a pleasing contrast with the green of the crops and of the natural vegetation.

Work Groups. A striking feature of Fon village life is the work group (*dokpwe*). Each group is formed of between fifty and a hundred men and is under the command of a group leader (*dokpwega*). This person is of considerable importance, not only because he controls so many of the activities of his fellows but also because he has charge of the burial ceremonies for them.

The *dokpwe* helps its members to perform what a local proverb calls a man's three principal tasks: making a farm, roofing a house, and building a wall. All these are best done by team-work. This fact is easily demonstrated by the sight of forty or fifty men breaking the ground for a field, each man hoeing his own row, the hoes striking the earth in unison and the strokes being timed by the rhythm of the songs of those who, for the moment, have been relieved from work. These songs are among the most melodious and stirring of all Fon music. Work for the *dokpwe* is not regarded as burdensome toil but as a co-operative enterprise in which all are glad to participate, and the day's labour is concluded with feasting and merriment. The competitive element, too, is not absent. Two *dokpwes* will often thatch the same roof, each taking a side and each striving to be the first to reach the ridge-pole. The older men stack the bundles of thatch at the base of the wall. When all is ready, those on the ground begin to throw these bundles to the men above, who place them on the roof several layers deep and tie them down. The progress towards the ridge-pole is accompanied by shouts of encouragement or taunts from those who are working the faster, and the last few feet of thatching are done amid tremendous excitement. Rivalry does not lead to enmity, however, and, when the task is done, all the members of both *dokpwes* gather for a feast.

Economic Organization

Markets. Markets are held every fourth day in most of the towns. There are a few wholesale markets, where large farmers dispose of their produce, but most of the markets are retail. Women form the vast majority of both buyers and sellers in the ordinary markets, for few men engage in trade. Many women prefer not to do agriculture, but buy the food they need for themselves and their families. The largest Dahomeyan market is at Abomey, and to it women come from 15 or 20 miles around. It begins about 8.00 a.m. A wide clearing, free from grass but with a few trees for shade, forms the market-place. It has some thatched shelters and three iron-roofed pavilions provided by the Government, but, even so, most of it is exposed to the glare of the sun. By nine o'clock a fair proportion of the traders have come, and by ten o'clock proceedings are in full swing. It has been estimated that as many as ten thousand people use this market on some days. The sellers sit on the ground on mats or low stools, the vendors of any one commodity being grouped together with their wares spread beside them. So closely are they packed, indeed, that the buyers must pick their way carefully as they walk about. As the day advances and the heat of the sun increases, temporary shelters are made by thrusting short poles into the ground and laying mats on top of them. The press is at its greatest about two o'clock. After this the crowd begins to disperse; women who have sold out go home; and the streets leading away from the market-place are filled with returning purchasers. Cloths, calabashes, goats, hoes, chickens, eggs, yams, pigs, and many other things are carried or led away. By five o'clock most of the business has been done, and the sun sets on a quiet scene. Early next morning eight or ten women sweep away the debris. Each has a palm-leaf broom, which she wields in rhythmical manner to the accompaniment of a song. In this way the open space is soon made clean and ready for the next market day.

Trades and Occupations. Most of the Fons are tillers of the soil, but there are also many who are wholly employed in other occupations. Hunting, for example, is done by special groups of men, each headed by a leader. This leader is elected annually, and the choice usually falls on the man with the most distinguished record for the previous year. It must be understood, however, that such a record is not established by the number of animals killed but by the supernatural experiences of the hunter. Hunting is thought to bring men into close touch with the spirits of the forest, and special power is



4. *Appliqué cloth showing man caught by crocodile*



5. *A canoe on the Porto Novo lagoon*



6. *A fisherwoman on the Ouémé*

needed to gain the mastery over them. When a man is away hunting, his wives may not eat meat and must not say to anyone 'My husband is hunting', but simply 'My husband is away'. Many myths and legends testify also to a belief in the spirits of animals, some of whom need to be placated if their bodies are slain.

Another important occupation is that of grave-digging. This is a hereditary calling, and grave-diggers are held in great respect. They not only inter a corpse, but also wash it and prepare it for burial. They do no other work except as members of a *dokpwe*.

Arts and Crafts. The most highly respected craftsmen are the iron-workers. The reason for this is said to be that, if the blacksmiths did not make tools, farmers could not till their fields, woodcutters could not cut their wood, nor any other craftsmen ply their trades. Cloth-workers come second, because they make shrouds for the burial of the dead. After these come wood-carvers, potters (all women), jewellers, and others.

Fon art is characterized by a high level of skill in the artists. Wrought iron, carved wood, and appliqué cloth (Plate 4) all show a considerable mastery of the material and a sure grasp of technical problems. Furthermore, the artist is regarded as being a special type of person and is allowed to possess an 'artistic temperament'. The old kingdom of Dahomey reached a sufficiently high level of civilization to permit such specialists to spend their whole lives pursuing the professions and to enable them to produce beautiful objects which had no utilitarian purpose. It should be observed that the articles sold to tourists at Porto Novo or Abomey are by no means the finest examples of local art, but are usually turned out rapidly for purely commercial ends.

Music and Dancing. Musical instruments include reed zithers and flutes, ivory trumpets, gongs, rattles, and drums. Before the French conquest trumpets were only allowed to be played in the presence of members of the royal family, and to-day they are rarely used. Drums are probably the most numerous instruments, and each cult has its own sacred pattern. The use of the drum for the transmission of messages is confined to the praise of gods, kings, or chiefs. Gongs are made of iron and are usually struck with a short wooden stick; gongs with clappers are kept in some of the shrines and used in ceremonial dances.

Almost the sole purpose of these various instruments is to accompany the human voice, and songs are an intimate and important feature of Fon life. There are songs for every activity and occasion

of life: wedding songs, funeral laments, lullabies, dokpwe chants, religious hymns, and many others. They form what is probably the most advanced body of music in Africa south of the Sahara, although all the singing is in unison or in octaves.

Dancing also plays an important part in religious and social life, and very elaborate dances are often performed.

Religion

The Gods and Their Worship. Fon theology is extremely complex. The world is considered to have been created by an androgynous god named Nana-Buluku. This god gave birth to twins, Lisa and Mawu, one male and the other female. These two had fourteen children, eleven male and three female, many of whom produced offspring of their own. Nana-Buluku is worshipped at only one place, at a village near Abomey, but the other gods are grouped into three, connected respectively with the sky, the earth, and thunder. Each pantheon has its own temples, priests, forms of worship, special initiates, and devotees. These may overlap in various ways, and individual men may be members of more than one cult-group.

The religious week has four days, not seven, and three of them are sacred to gods. It will be remembered that markets are held every fourth day, so that this system is probably considerably older than the seven-day one.

There is also a belief in Fate, not so much as an inevitable destiny but as a scheme of life alterable, at least in details, by the help of a god. Besides priests there are also diviners, men skilled in determining Fate and in recognizing lucky or unlucky days.

Almost every activity of the Fons has a religious aspect, and every major event in a man's life, from the cradle to the grave, has its proper accompaniment of rites, offerings, songs, and dances. In all things, indeed, it may be said, these people are 'too superstitious'.

7. HISTORY

Early History to the Death of Agadjá

The Foundation of the Kingdom. There are two traditional accounts of the foundation of the powerful kingdom of Dahomey. According to the first of these the Dahomeyans (then called Fons, Foys, or Effons) inhabited a small area between Cana and Abomey. Early in the seventeenth century Takodonu, chief of the Fons, murdered the

chief of Cana, seized his town, and made himself master of his country. Thus strengthened, he laid siege to Abomey, which he took about the year 1625 after a stubborn resistance by its king, Da. In accordance with a previous promise made by Takodonu to his gods, Da was sacrificed, his body was ripped open, and on his belly was erected a palace, which took the name of *Dawomi* (= Da's belly). Abomey became the capital, and Takodonu the king of Dawomi. His subjects gradually adopted that name, and by the end of the eighteenth century the name Fon was almost forgotten, though the French have now revived it.

The other tradition, more widely accepted, is that at the beginning of the seventeenth century there were two kingdoms in the southern part of the country, both of which had attained prosperity by the slave trade. They were Ouidah (Juda, Ayuda), the capital of which was Savi, about 7 miles inland, and Allada (Ardra), which extended some 25 miles from the northern boundary of Ouidah to a marshy belt named the Ko. To the north of this marsh lay the country of the Fons. About the year 1610, on the death of the King of Allada, a war of succession broke out between his three sons: one of them eventually gained the upper hand, drove out the other two, and remained King of Allada. One of his defeated rivals fled south-east and founded the kingdom of Porto Novo or Little Ardra. The other, Takodonu, fled with his adherents across the Ko to the country of the Fons, whose chief, Da, gave him land for the support of himself and his followers. Takodonu repaid his kindness with treacherous ingratitude, killing him and seizing his kingdom. At this point the two traditions blend. Nothing more is known of Takodonu, save that he died about 1660.

The kingdoms of Allada and Ouidah attained great prosperity from the slave trade in the latter part of the century, and Europeans had factories in both. The French fort at Ouidah was founded in 1671, and the English, Dutch, and Portuguese also had establishments there. The Dutch fort was later replaced by a Brazilian one. Frequently ten or twelve ships would be lying at anchor off Ouidah at one and the same time. In 1670 the King of Allada dispatched an ambassador to France, and, on his return, the French assumed the leading position among the European nations trading with Dahomey. In his kingdom and in its anchorages the King of Ouidah enforced neutrality between merchants of all nationalities, even though their sovereigns might be at war. This arrangement lasted until the downfall of the kingdom in 1727.

Agadja. Agadja (Agaja, Guadja Trudo) succeeded to the throne of Dahomey in 1708. His kingdom had been considerably enlarged since the times of Takodonu, but it still had no seaboard. Hence all European goods destined for it, and all slaves exported from it, had to pass through two sets of middlemen, those of Allada and those of Ouidah. Agadja first attacked the former, whose king vainly invited the assistance of the latter. In 1724, after a three days' battle, the town of Allada, said to have had a circumference of 9 miles, was sacked, the king was slain, and 8,000 prisoners were taken. From that time until the French occupation Allada was little more than a village, and the kingdom of that name was annexed to Dahomey. Such of its citizens as escaped fled eastwards. Here they enlisted the sympathies of the Yorubas, who invaded Dahomey; but Agadja, after repulsing the invaders, prudently came to terms with them. He then turned his attention to Ouidah, and demanded a free passage for Dahomeyan merchandise through all its territories. This being refused, he surprised the capital, Savi, in February 1727 and pillaged and burned it. The king escaped to Grand Popo, but thousands of his subjects were captured, slain, or drowned in the lagoons. Four thousand of the captives were sacrificed, their heads being struck off by young boys whom Agadja desired to harden to scenes of bloodshed. Among the prisoners taken at Savi were some forty Europeans, whose establishments had been destroyed. They were taken to Allada and politely received by Agadja, who set them at liberty with a promise that he would make trade flourish. This promise he and his successors certainly fulfilled. The King of Ouidah now offered to pay tribute, but, on being informed that he must give himself up, no doubt for sacrifice, turned to the Yorubas for aid. The latter invaded Dahomey again and inflicted some damage, but, not being able to supply their armies from home, they withdrew early in 1729. In August Agadja marched south. His army had been much depleted by his wars with the Yorubas, and to give it the appearance of strength he equipped a number of women, whom he proposed to keep in the rear. This was not done, however, for in the conflict which followed the men were so hard pressed that the women had to come to their rescue, thus converting defeat into overwhelming victory. The kingdom of Ouidah ceased to exist and Little Ardra was incorporated into Dahomey. After the war Agadja put the women's army on a permanent footing, and so began the famous corps of Amazons.

Agadja, who died in 1732, may be regarded as the second founder of the kingdom of Dahomey. Succeeding to a petty state, he increased

its area fourfold, and, by the conquest of Allada, gained control of the whole of the slave trade and of the little other commerce that there was on the Slave Coast. For the next hundred and fifty years Dahomey took rank with Ashanti and with the Yoruba state as one of the three principal kingdoms of the forest country south of the Sahara. Agadja also reduced Porto Novo to submission, but permitted it to exist as a vassal kingdom. Its kings were of the same royal line and its constitution was similar to that of Dahomey, although it had no Amazons. In practice it was left to manage its own affairs and paid no tribute; but Dahomey's claim to suzerainty was never abandoned in theory, and the attempt to put it into execution against the French was one of the causes of the downfall of Dahomey 150 years later.

It should be noticed that the modern colony of Dahomey is very considerably larger than the ancient kingdom. At its greatest the latter never included Porto Novo or Cotonou and did not extend farther from the sea than some 8° N.

The Structure of the Kingdom

The King. The King of Dahomey was an absolute monarch. He had power of life and death over any of his subjects, although he usually exercised his authority through his ministers. In his presence no one, however exalted, was free from the humblest obeisance. On first appearing before him a man had to throw himself on the ground and put dirt on his head. No one was allowed in the king's sight to have his head covered, to ride on an animal, to smoke, to be shaded by an umbrella, or to wear sandals or shoes. Even to-day all these details of court etiquette are observed in the compounds of chiefs who are members of the old royal family.

The king had a very large number of wives, and, in theory, all women were at his pleasure. Any one of them, single, betrothed, married, or widowed, could be taken by him and placed in the royal harem. Estimates of their numbers vary considerably, but the usual figure was probably in the neighbourhood of two thousand. A normal sexual life was clearly impossible for the majority of these women, and their choice lay between celibacy and adultery. The latter, if detected, was punished by the death of the wife and of her paramour. It was, moreover, an offence for a man even to see one of the king's wives, except in her husband's presence, and they were treated with the greatest respect. When they were walking about engaged in fetching food or water for their royal consort and his

ministers they were preceded by a female slave ringing a bell. All persons, male and female, had to turn their backs, and men had to retire a few yards. This procedure was a great nuisance when the court was in residence in a town.

In most years the king led his army on a marauding or slave-raiding expedition in January or February, returning to his capital, Abomey, in April. In May he moved to Cana, the sacred city, where in latter times he celebrated the defeat of the Yorubas (*see below*) and the extinction of the tribute formerly paid to them. In October or November he made a state entry into Abomey, where he witnessed the annual custom, and resided there for the rest of the year.

On his death a king was succeeded by one of his sons, previously nominated by him. The choice usually fell on the eldest son of the late sovereign's favourite wife, but there was no fixity in the matter.

Government. There were seven principal officers of state, all with female counterparts inside the royal palace. The kingdom was divided into the seven provinces of Abomey, Allada, Zagnanado, Maxi, Atakpame, Ouidah, and Adja, each administered by a governor. These provinces were subdivided into village districts, governed by village chiefs.

None of these offices was hereditary, and no member of the royal family was eligible to hold any of them.

The official best known to European travellers was the Governor of Ouidah, the Yevogan or 'captain of the white men', and much has been written about his cunning and his power.

The Customs. The 'customs' were two in number. The Grand Custom was only celebrated at the death of a king and was most elaborate. That of 1789 on the death of Adahunzu II lasted three months, and 500 persons were sacrificed. The total would have been more, if a sudden demand for slaves had not arisen. The Annual Custom took place in the autumn. It was a comparatively mild affair at which about 50 victims, a number reduced by Gezo in 1850 to 36, would be sacrificed. Like the Gold Coast Yam Custom, it served the additional purpose of gathering chiefs to the capital for political discussions. At both these customs the principal Europeans from Ouidah and other distinguished strangers were expected to attend. Full descriptions of the customs and their ceremonies are given by many writers, notably by Dalzel and Burton.

Human sacrifices on a large scale, however, took place at any crisis in Dahomeyan history as well as at the customs, and it is also estimated that in an ordinary year the king would dispatch 500 persons with

messages for his ancestors, often on very trivial matters. It was firmly believed that the messages would reach the departed kings in the spirit world, and the messengers themselves usually showed no fear of death by decapitation.

Early writers report rumours of cannibalism in Dahomey, but there is little evidence that this ever took place.

Revenue. Throughout its history the kingdom derived its principal revenues from the slave trade. Other sources of royal income were the gifts made by chiefs at the annual custom and the tolls collected from traders. At the entrance of every town there was a custom-house, at which traders had to pay dues before offering their goods for sale. Large sums were extorted by the king and the governors for real or imaginary offences, and, on the theory that all property belonged to the king, there was also some barefaced plunder. This last, however, must have been limited; for, had it been carried to excess, even the servile negroes of Dahomey would have risen in revolt. Indeed, it was such wholesale plundering that led in 1818 to the downfall of Adanzan.

On anchoring in the roads of Ouidah, Europeans had to pay dues consisting of a percentage of their cargo, which was collected, frequently in kind, by the Yevogan. This officer was not always content with fixed dues, and his additional exactions were often arbitrary and were collected by simple direct methods. Of these 'closing the road' was a good example. Should a European refuse to submit to some demand, the roads to his store were closed, no produce of any kind could be taken to it, and no purchaser could approach it. His business was thus brought to a complete standstill until he submitted.

Another form of extortion to which Europeans were liable was at the hands of the 'King's Thieves'. These men, even if caught red-handed, were always acquitted, provided that they had not kept any plunder for themselves. Protection was given against private burglars.

These exactions, however, were wisely kept within such limits as would permit the traders to make comfortable profits.

The Amazons. The origin of the Amazons has been described above. Before the time of Gezo (1818-1858) this corps was chiefly composed of such female malefactors as wives detected in adultery, termagants, and scolds, together with a number of women given to the king by the provincial governors for misdemeanours and crimes. These women escaped sacrifice by military service. Gezo, acting on

the doctrine that every person in Dahomey was the king's property, directed every head of a family to send his daughters to Abomey for inspection. The most suitable were enlisted. Amazons were regarded as the king's wives, and he could treat them as such in fact; but, unless the king were responsible, pregnancy in an Amazon spelt death, and the corps was forbidden any communication with the opposite sex. When these women soldiers paraded with the male army, a piece of bàmboo, which no man might cross, was laid on the ground in front of them. They were under their own women officers, and their organization into companies and battalions was the same as that of the men. Of their bravery there can be no doubt, but romance, in suggesting such figures as 10,000, has greatly exaggerated their strength. Gezo increased their numbers, but the whole of the army with which he marched out to attack Abeokuta in 1851 could not have mustered more than 20,000 combatants, of whom not more than 4,000 were likely to have been women.

The Eighteenth and Nineteenth Centuries

Europeans at Ouidah. The first European to give any account of Dahomey was Thomas Phillips, who went there in 1693. Numerous other travellers visited Ouidah during the next two centuries. Among them were the Dutchman William Bosman (1720), Bullfinch Lambe (1724-1726), who was the first European to see Abomey, Captain William Snelgrave (1726), Archibald Dalzel (1793), Dr. John McLeod (1819), Captain R. F. Burton (1863), and J. A. Skertchley (1871). All these men wrote books about their experiences.

From the middle of the eighteenth century onwards there were usually several groups of European merchants living in Ouidah. Each group had its director, who was responsible to the Yevogan for the good behaviour of his compatriots, who was required to be presented to the king on first taking up his office, and who was bound to attend the annual custom at Abomey. So steady was this contact that Dalzel wrote that 'the short interval from Ouidah beach to Abomey is perhaps the most beaten track by Europeans of any in Africa'.

Until the second half of the nineteenth century no European Power made any attempt to take Dahomey under its protection or to interfere in any way with its administration. Europeans had forts at Ouidah for trade alone, and the whole town was unquestionably under the authority of the Yevogan. European communities were not independent, as were the contemporary settlements at Cape

Coast or St. Louis, although purely domestic matters were regulated by their respective directors.

Bossa Ahadi. For fifteen years after the death of Agadja in 1732 Dahomey was annually attacked by the Yorubas. In 1747 Bossa Ahadi, the then King of Dahomey, made peace and agreed to a heavy tribute. For the next seventy years this was punctually paid at Cana, where there was a small Yoruba settlement. The Yorubas were the one nation for which the kings of Dahomey had a wholesome respect, and they more than once abandoned cherished designs at Yoruba bidding. On the other hand, the Yorubas were not interested in Dahomey so long as the tribute was paid and no threat to themselves or to their friends developed. This 'gentlemen's agreement' lasted until the collapse of the Yoruba kingdom in 1820.

Freed from the Yoruba menace, Dahomey extended its territory; and in 1750 Bossa Ahadi incited the men of Kwahu and of Akim to rebel against their suzerain, the King of Ashanti, and sent an army to support the rebels. The Ashantis, however, fell upon their vassals before the promised aid arrived, and then, crossing the Volta to chastise the Dahomeyans, themselves suffered a heavy defeat at their hands a few days' march to the east. As the Volta is 120 miles from Abomey, and as the tribes between had not at that time accepted Dahomeyan rule, the story would be almost incredible, if it did not find a place in the annals of both sides.

Bossa Ahadi also subdued the Mahis, a tribe living to the north of Atchérivé, but he had to deal with continuous revolts of Ouidah, which were supported by Grand Popo. In one of these revolts the Dahomeyan army suffered disaster, for the warriors of Grand Popo fell upon them on the beach, and destroyed the canoes by which they had crossed the lagoon. Emaciated by famine, the Dahomeyans were cut to pieces, and the victors sent the only twenty-four survivors to carry the news to their king. Bossa Ahadi sacrificed these survivors as messengers of his displeasure to their former comrades, and decreed that from that time forward no military operations should be undertaken which required transport by water. In 1763 a second campaign retrieved the situation, but Bossa Ahadi died in 1774.

Adahunzu II. For the remainder of the eighteenth century the history of Dahomey is one of expeditions against neighbouring tribes. Their details are of little interest, but each of them brought its quota of prisoners for the slave trade and for sacrifice, and their general result was the extension of the kingdom of Dahomey. In 1778 Adahunzu II formed an alliance with the King of Little Ardra for

the subjection of Porto Novo, Apa, and Badagri. This 'Porto Novo' was the present Cotonou, whereas Ardra, the then capital of Little Ardra, is the present Porto Novo. According to tradition the inhabitants of Appa were fugitives from Allada, having fled when their country had been conquered in 1724, whilst Badagri was an Appa town. Operations continued for some years, during which the Dahomeyan army filled in a creek rather than take to canoes. In spite of a heavy defeat in 1783, which the Dahomeyans attributed to the treachery of their Little Ardra allies, Badagri was taken in 1784. Though the men of Little Ardra secured most of the booty, 6,000 skulls were conveyed to Abomey. These proved to fall short by 127 of the number required to crown the exterior walls of one of the king's palaces, and 127 more prisoners were promptly slaughtered in cold blood. In 1786, when Adahunzu was collecting an army to punish the men of Little Ardra for their alleged treachery, he received and obeyed a peremptory order from the King of the Yorubas to desist. Adahunzu passed the rest of his reign in consolidating his power to the west and north-west, and died in 1789.

The Chachas and Gezo. There are many obscure features about the history of the next twenty years; but under Adanzan, who probably reigned from 1797 to 1818, cruelty and rapacity reached heights which even the submissive Dahomeyans could not tolerate. Neither life nor property was safe, and, as all prisoners taken in the annual raids were sacrificed, the supply of slaves fell off. At this juncture there appeared on the scene Felix da Souza, one of the most remarkable of all the characters in the history of West Africa. This man, a Brazilian mulatto from Rio de Janeiro, was the principal slave-dealer in Ouidah, and founded a family that was destined to play a leading part in Dahomey all through the nineteenth century. He and Domingo Martinez, the leading slaver of Cotonou, seeing the supply of slaves drying up, plotted with Gezo, the king's brother, and with the leading men of the kingdom to depose Adanzan. The plot was successful, and for the first time a king of Dahomey was dethroned. Custom forbidding the shedding of royal blood, Adanzan was walled up in the palace and left to starve. Gezo, who owed his success largely to da Souza and Martinez, ascended the throne amid general approval. The two foreigners were styled his brothers and were given special privileges. Da Souza was created 'First of the White Men' and 'Chacha' of Ouidah. 'Chacha' is derived from *chanchan*, a word meaning forger of coins in Brazilian *patois*, and was a nickname given by the Europeans of Ouidah to da Souza in

allusion to his previous activities. It was now adopted as a title of honour, and for many years da Souza and his descendants exercised great influence on the politics of Dahomey under the style of 'Chachas of Ouidah'. They largely supplanted the Yevogan, although his office was not formally abolished.

Under Gezo the export of slaves from Ouidah and Cotonou revived, despite French and English efforts to suppress it. Da Souza and Martinez, acting with the king, were able to secure the closing of the roads to Europeans when a gang of slaves was due to arrive at the coast. The English officers employed spies, who were very often bribed by the slavers' agents, and a great percentage of cargoes reached Cuba and Brazil, where they fetched high prices.

In the first quarter of the century the Yoruba State, at its zenith more powerful than either Dahomey or Ashanti, was breaking up under the pressure of the Fulani and the Hausa from the north. In the south several smaller independent Yoruba states were formed, the chief of which was Egba with its capital at Abeokuta. In 1820 Gezo repudiated the tribute which had been regularly paid since 1747, and resumed the old state of perpetual warfare against Egba, vowing ultimately to sack Abeokuta. For the time no attempt was made to carry out this ambitious threat, but early in his reign Gezo destroyed Jenna, a Yoruba town on the river Yewa, and about 1830 he attacked Ashanti. This was the second and last occasion in their history that the two Powers clashed, and, although Gezo built himself the Kumasi palace at Abomey to celebrate his victory, in reality Dahomey suffered a severe defeat.

In 1851 Gezo increased and improved his force of Amazons and carried out his long-formed intention of attacking Abeokuta. He moved against it with an army some 15,000 strong, including 3,000 women, but he had no success. He was, indeed, betrayed by the people of Ishagga, a town about 10 miles from Abeokuta, who swore to join him and then persuaded him to alter his plans. As a result, the attack was easily repulsed, and the defenders could have turned the repulse into a rout if they had shown more spirit. This was the more possible as the retreating Amazons were attacked by their pretended allies at Ishagga. The Dahomeyan loss was in the neighbourhood of 1,200, and the Amazons, who had behaved with great gallantry, suffered very severely.

Gezo died in 1858. He was no friend to the British, but he considerably reduced the number of human sacrifices and also put a stop to the massacre of palace women that used to follow the death

of a king. It is said that his son Gelele was only allowed to succeed on promising to restore the ancient ways. At the Grand Custom for his father he sacrificed more than 700 persons.

The Slave Trade. From its first contact with Europeans Ouidah was the chief place of export in the Bight of Benin, closely followed by Badagri and Lagos. At the end of the seventeenth century 20,000 slaves were annually exported from Dahomey. By 1789 the country was said to be less populous, and it was stated in evidence before the Committee of Trade and Plantations that the annual export from Dahomey was then between 10,000 and 12,000, of whom the British exported some 800, the Portuguese 3,000, and the French the rest.

Speaking of Ouidah in 1840, Sir Thomas Fowell Buxton said: 'This place is the residence of the notorious da Souza, slave-broker to the King of Dahomey, and it enjoys very little, if any, legitimate trade. The captain of a merchant ship has stated that he has seen there 28 slave vessels under Spanish and Brazilian colours. "These vessels", he observes, "would carry on an average 350 or 400 slaves each. On returning ten months afterwards, I have seen several of these vessels in the same roadstead, having in the interim completed a slavery voyage to Brazil and back."' With the object of inducing Gezo to abandon this traffic and to abolish human sacrifice, Captain Winniett, Governor of the Gold Coast, was sent in 1847 on the first British official mission to Abomey. Gezo was easily persuaded to execute a treaty of friendship and commerce (5 April 1847), but, though he professed himself willing to come under British protection, he absolutely refused to give up the slave trade.

In the same year, forty years after the legal abolition of the trade within the British Empire, it was calculated that some 84,000 slaves were annually taken from Africa to America. Captain Winniett, in evidence given before a Select Committee of the House of Lords, stated that Dahomey furnished 8,000 (although Burton's estimate of 1863 was 15,000). A further thousand were captured each year and kept in slavery in the kingdom. A selection from the captives taken in each marauding expedition was reserved for the king, and the remainder was handed over to his captains. All these men sold slaves to the dealers, so that the king was not the only one to have a stake in the trade. An export duty of 5 dollars *per caput* went to the royal treasury, and merchants paid charges for accommodating slaves on their way to the coast in barracoons erected by the king. The king also sold about 3,000 of his own slaves annually at 80 dollars apiece. All told, his revenue from the slave trade was said by Captain

Winniëtt to have been 300,000 dollars, or over £60,000, a year. It is small wonder that, anxious as he professed himself to be for British friendship, Gezo refused it at the price of abolishing the slave trade in return for a beggarly annuity of £500 for seven years.

In subsequent years other and similar British missions were sent with the same object, to which was added a request that Abeokuta, which had become the principal centre of missionary effort on the Slave Coast, should be left in peace. Most of these missions failed, although in 1852 Gezo, doubtless influenced by the British bombardment of Lagos in the previous year, signed an abortive treaty for the abolition of the export of slaves. Great Britain had no desire to annex Dahomey, but her insistence on the ending of the slave trade turned Gezo towards France. Bouët-Willaumez, whose functions as naval commander-in-chief at Goree included supervision of French interests south of Senegal, had visited Abomey in 1851 and had concluded with Gezo a treaty of friendship and commerce only. This gave France a foothold in Dahomey and ultimately led to the downfall of the kingdom.

Meanwhile, the Royal Navy's work at sea was becoming highly successful; and, so far as is known, the last slaver to run the blockade from Ouidah was the steamer *Cicéron*, which landed 1,100 negroes in Cuba in 1863.

Gelele and the French Protectorates

The Reign of Gelele (1858-1889). In 1861 the British Government sent armed forces to support Abeokuta against a threatened attack by Dahomey; but, before they could arrive, an outbreak of small-pox in his army caused Gelele to abandon his intentions. Two years later a mission headed by Captain R. F. (afterwards Sir Richard) Burton, British Consul at Fernando Po, was not so completely sterile as its predecessors, for it produced one of the classic books of African travel. This was *A Mission to Gelele, King of Dahomey*, which was published in London in 1863. Gelele continued his father's campaigns against Egba, and in 1862 Ishagga was destroyed as a punishment for its treachery of eleven years earlier. The attack of 1864 found Abeokuta well prepared, with forces totalling 20,000 against the Dahomeyan army of 12,000. All the villages between the Yewa and Abeokuta had been evacuated, and all supplies removed. The invading army, already suffering from hunger, had nothing but a little cassava for the last 25 miles of its march. Even so, on 15 March it went boldly to the assault, the Amazons displaying their usual

courage. Three of them succeeded in planting their banner on the wall, but they were immediately slain. The Dahomeyans were forced to give ground. This retreat was turned into a rout by a party which took them in the flank. Their losses were 3,000 killed and 1,500 prisoners, whereas the Egba casualties were 50 killed and 100 wounded. This was, of course, a crushing defeat, but Gelele disguised it by buying a number of slaves and with them making a triumphal entry into Abomey. A month later he sent a force to ravage the country north of Porto Novo and to obtain victims for the customs. In subsequent years his armies annually overran Ketou and the western Egba territories. The inhabitants never ventured to oppose and retired to Abeokuta, leaving their villages at the mercy of the invaders. In 1873 and 1874 Gelele again threatened Abeokuta, but it remained untaken until it was included in the British protectorate in 1888. In the annual expedition of 1886, which took place farther south than usual, Gelele's men pushed so far east that the town of Otta was abandoned by its inhabitants and refugees crowded into Lagos.

The French Protectorates. Beginning with Bouet-Willaumez's treaty of 1851, France gradually increased her hold on Dahomey. In 1863 the King of Porto Novo accepted a French protectorate. This ceased to be exercised in 1867 and was officially abandoned in 1868. In 1864 Petit Popo (Anecho) was ceded to France. Cotonou was ceded in 1868, but its cession was repudiated by Gelele on the ground that the Yevogan, who had signed the treaty, had done so without his knowledge or authority. In any case, this treaty, like those concluded in the same year with Agoué and with Porto Ségouro, was not followed by active occupation.

In 1878, however, France made a new treaty with the Yevogan, by which the cession of Cotonou was confirmed. On this occasion the French flag was hoisted as soon as the treaty was executed, and in 1879, despite the protest of Gelele, a French Resident was appointed there by decree. The same treaty released the leading French merchants from the obligation to attend the annual custom at Abomey.

By this time Europeans had ceased to take part in the slave trade, and their more legitimate interests called for protection by their governments. In 1876 Gelele carried off to Abomey the agent of a well-known British firm, Messrs. F. & A. Swanzy, and a British squadron blockaded his coast, demanding as compensation £6,000 or 500 puncheons of palm oil. A French firm that was being ruined

by this British action supplied 200 puncheons of oil. This was handed over in the name of the king, and the blockade was raised. Gelele's representative had agreed that British subjects should thenceforward have liberty to reside, hold property, and trade in any part of Dahomey and that they should be exempt from the necessity of attending the annual custom, but his master repudiated the whole settlement. Even so, the blockade, once raised, was never reimposed. Gelele prophesied that the oil would never reach England, and it happened that the ship carrying it was wrecked off Cape Palmas.

Early in 1883 the French protectorate over Porto Novo was re-established at the request of its king, Toffa, and on 19 July of the same year the French protectorate over Grand Popo, Agoué, Anecho, and Porto Ségouro was resumed by treaty with the local chiefs. This last protectorate was not of long duration, as France recognized the German colony of Togo by the Treaty of 24 December 1885. A boundary was fixed which gave these places to Germany in exchange for the renunciation of German claims to certain areas in French Guinea.

Meanwhile Portugal was aiming at a protectorate over Dahomey, and in January 1886 the Portuguese Minister in London notified the British Government that, in virtue of an agreement made on 5 August 1885, Portugal had taken the whole of its coastline under her protection. This treaty had been negotiated by Francisco da Souza, the fifth and last Chacha of Ouidah. Although there was no doubt that a treaty had been signed, Gelele completely disowned it to a Portuguese mission that visited Abomey in 1887, and at the end of that year Portugal withdrew all claims. Da Souza was called to Abomey, whence he never returned. He is believed to have died in prison there in 1892, and this episode marks his family's last appearance on the Dahomeyan political stage. To-day its members are petty tradesmen.

Cotonou and the French protectorates at Porto Novo and Porto Ségouro were administered by a Resident at Porto Novo. The first Residents were French merchants, but from 1884 onwards they were officials. These settlements were originally under the Governor of the colony of Gabon, but a decree of 4 August 1886 placed them under the Governor of Senegal. Extension of the French protectorate to the north of Porto Novo made imperative the delimitation of a frontier with the British territory of Nigeria, and this international boundary was settled from the seaboard northwards to latitude 9° N. by the Anglo-French Convention of 10 August 1889.

Behanzin and the French Conquest

Behanzin. The same extension embroiled the French with Gelele, for it covered country towards Ketou into which he penetrated on his annual slave-hunting expeditions. In November 1889 Dr. Bayol, Lieutenant-Governor of the Rivières du Sud, visited Abomey in person to protest and to endeavour to reach an arrangement. After the first formal meeting Gelele pleaded illness, and died on 30 December. His son and successor Kondo, or Behanzin (as he became on mounting the throne), not only claimed suzerainty over Porto Novo but also refused to recognize any French pretensions to Cotonou and demanded its evacuation. In February 1890 the Yevogan of Ouidah invited the seven French inhabitants to a meeting, made them prisoners, and sent them to Abomey. In March Cotonou was attacked, but the assault was repulsed with heavy loss. On 20 April a column of tirailleurs and native auxiliaries was badly mauled at Atchoupa, 4 miles from Porto Novo, by a force of 9,000 Dahomeyans including 2,000 Amazons. Numerous casualties were suffered by them, and they were compelled to retire to Porto Novo. In this first clash with Dahomey the French had come off none too well, and it was decided to treat. Behanzin, too, did not wish to push matters to extremes. By that time he probably realized that Dahomey, even though it might escape direct annexation, must ultimately link its fortunes to one of the European Powers, and of them all he preferred the French. By a treaty signed at Ouidah on 3 October 1890 he promised to abstain from all incursions into Porto Novo and recognized the French protectorate over it. He refused the direct cession of Cotonou, but agreed to allow the French to occupy it indefinitely. In return, France was to pay Behanzin an annuity of 20,000 francs and to exercise her protectorate over Porto Novo in such a way as to give the King of Dahomey no legitimate cause for complaint.

Dodds's Expedition. This settlement was adversely criticized in the French Chamber and did not last for long. Behanzin bought arms and ammunition from German firms in Ouidah, professedly for an expedition against Abeokuta, and in March 1892 he invaded the kingdom of Porto Novo. Notwithstanding the treaty of eighteen months before, he again claimed suzerainty over it. By his orders three French merchants were arrested at Ouidah and sent to Abomey as hostages, and his armies threatened Cotonou, Porto Novo, and Ouidah. In April Colonel Dodds, who had been invested with supreme powers, both military and civil, disembarked at Cotonou.



7. *An ox cart used in road making*



8. *The intercolonial road north of Bimbéréke*



9. *A field of manioc*

Behanzin released his hostages, but did not withdraw his troops. Dodds first cleared the south, and then advanced from Porto Novo with a force of 76 officers and 2,088 men, of whom about 930 were natives. He was supported on the river Ouémé by a flotilla of four gunboats, which engaged the enemy on several occasions. A small detachment crossed the river near Dogba, where it met with opposition on 19 September, but the main body, after naval reconnaissance as far upstream as the junction with the Zou, crossed near Gbédé on 2 October. The expedition suffered severely from lack of water, but kept in daily touch with the enemy, and fought five major engagements before reaching Cana on 4 November. Receiving proposals there, Dodds halted, but, negotiations proving fruitless, he entered Abomey on the 17th. He then found that Behanzin, after having burnt a large part of the town, had fled to Atchérivé, 30 miles to the north. Abomey was not fit for occupation by a large force, so that Dodds, leaving a small garrison there, withdrew the bulk of his men to Porto Novo, where he arrived at the end of the month. In action alone his little army had lost 11 officers and 70 men (of whom 33 were natives) killed and 25 officers and 411 men (of whom 216 were natives) wounded. Shortage of water, disease, and the hardships generally inseparable from bush warfare must have added many more casualties, though no figures are available. The ancient kingdom of Ouidah was annexed to France, and the rest of the kingdom of Dahomey was made a French protectorate.

Although Behanzin had fled and was, at least temporarily, discredited among his people, it was felt that there could be no permanent peace so long as he was at large. Several messages were received from him offering to surrender on terms, but all requests to him to appear in person under a safe conduct met with no response. In October 1893 columns of troops were sent to search for him; but, after evading them more than once, he surrendered at Yégo, 7 miles south of Atchérivé, on 25 January 1894. He was deported to Algeria, and died there in 1906.

The Colony of Dahomey from 1893

The End of the Protectorates. In 1893 Dahomey received the status of an independent colony with a governor directly responsible to the home government. Porto Novo became the capital. At first all the annexed territory was administered directly, but at the beginning of 1894 two protected kingdoms were constituted. One was Allada, the ancient kingdom of that name, under Gigla, a member of its old

royal family. The other was Abomey, where the French accepted Agoliagbo, a brother of Behanzin, as king with the consent of the chiefs and on his swearing to accept a protectorate. His domains were greatly reduced, being bounded on the west by the Cuffo, some 10 miles west of Abomey, on the south by the kingdom of Allada, on the east by the Ouémé, and on the north by the Mahi country, which begins near Atchérivé. Tribes subjugated by Dahomey outside this area were declared independent but under French protection.

The protected kingdom of Abomey was short-lived. Agoliagbo, proving intractable, was deported in 1900, and his kingdom was placed under direct administration. Allada suffered the same fate after the death of Gigla in 1909; and in 1913, on the death of Toffa's successor, who had not been recognized as king, but only as superior chief of Porto Novo, the last traces of that kingdom also were abolished in favour of direct rule.

At various times the settlements from which the colony had grown had been administered by various authorities. A list of the decrees concerning its government, some of which have been mentioned already, will be found on p. 91. Dahomey was left outside the original Federation of French West Africa, but was included in 1899.

Northward Extension. The kingdom of Dahomey having been completely subdued, the French saw no reason why they should not extend their possessions northward to the Niger to link up with their Sudanese empire. The treaties with Germany and with Great Britain had only defined spheres of influence as far north as the ninth parallel. Beyond that the field was still open to competition.

The first French objective was Borgu, whose paramount chief lived at Nikki. The Borgu country extended to the Niger at Busa, the chief of which place had already signed a treaty with the British. Captain Decœur arrived at Nikki on 25 November 1894, only to find that he had been forestalled by Captain F. D. Lugard, who had obtained a treaty on behalf of the British five days earlier. Notwithstanding this, the chief also signed a treaty with Decœur, and defended his action a year later on the ground that, since it had been entered into by the Moslem chief alone, the treaty with Lugard was defective.

Decœur returned to Carnotville, and then visited Sansanné Mango in January 1895. Here again he had been forestalled by Lugard, and on this occasion he bowed to the inevitable. Not so his German rival, Dr. Gruner, who, arriving a few days later, obtained a treaty putting Sansanné Mango under German protection. Another French envoy,

Alby, at the end of the same month, had no difficulty in persuading this chief to accept French protection in addition to that of Great Britain and of Germany.

Gourma was next on the list. Decœur arrived at Pama after von Carnap, a second German. The latter had taken the Chief of Pama for the paramount chief of Gourma and had signed a treaty with him on 14 January 1895, putting Gourma under German protection. Then, learning of his error, he posted off to Kantchari, where he concluded another treaty. There he was joined by Decœur, who had meanwhile concluded a treaty in favour of France with one Bantchandé at Fada N'Gourma. This time the French had backed the right horse, for Bantchandé turned out to be the rightful sovereign of Gourma.

There were other similar instances, and it became clear that this three-cornered game of treaty-hunting could not be prolonged indefinitely without danger both to the European Powers and to the natives. Towards the end of 1895, therefore, negotiations began between London, Paris, and Berlin with a view to clarifying the situation. These had their outcome in the Franco-German Treaty of 23 July 1897 and the Franco-British Treaty of 14 June 1898.

As far as the French colony of Dahomey was concerned, these agreements settled its boundary with Togo from the gulf of Guinea to latitude 11° N., leaving Sansanné Mango to the Germans; but the lands of the Gourma, Moshi, and Gourounsi tribes, together with the west part of Borgu, fell to the French. In addition, though Busa and Illo were given to Great Britain, Dahomey secured an outlet to the Niger above those places with rights, in common with the other colonies of French West Africa, of navigation on the river to its mouth. With this settlement disappeared a most dangerous international situation.

The Franco-British Treaty of 1898 also included Dahomey in the area in which British subjects and protected persons were assured of equality of conditions as regards all matters of trade, navigation, and taxation. This provision was to last for thirty years or until subsequent denunciation by either party. The French exercised this right in 1936.

The actual delimitation of the Anglo-French boundary was completed to the Niger in 1900, but the boundary between Togo and Dahomey was not finally settled for many years, largely owing to difficulties between the Germans and the natives. It was not, indeed, precisely fixed until the Franco-German Declaration of 12 September 1912.

In 1900 Gourma and Say, until then administered by Dahomey, were transferred to French Sudan. By this change the colony of Dahomey assumed its present outline.

The War of 1914-1918 and After. Troops from Dahomey took part in the conquest of Togo in 1914 (p. 494), and some men from Dahomey also served in Europe. During the war, in Dahomey as elsewhere, agitators made the most of rumours of French defeats, but such sporadic risings as resulted were easily suppressed. The most notable of these was in Borgu, where a pacification was undertaken by armed forces in 1916. Since then, except for some minor trouble over taxation at Porto Novo in 1922, there has been nothing noteworthy in the history of the colony.

The old kingdom is gone. Its kings, its slaves, its Amazons, its royal wives, and its bloody sacrifices are no more. Where absolute monarchs once held undisputed sway there is now found the mild rule of district commissioners and of constitutional chiefs. Ouidah is a minor port and Abomey a provincial headquarters. Yet the blood of Adahunzu and of Gelele still flows in the veins of many French subjects; the royal ancestors are still worshipped; and tales and ballads keep alive the memory of the days when Abomey was the centre of a great kingdom and when the barracoons of Ouidah witnessed their scenes of misery and horror.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

IN 1937 Dahomey had a population of 1,289,128, with a density of 29.58 persons per square mile. This last figure is the highest for any of the colonies proper, but it is less than those for Togo and for the District of Dakar. Areas of relatively low density are found in the north and in the centre, but the southern provinces of Abomey, Athieme, Cotonou, and Porto Novo have great concentrations. These provinces, of course, were formed from the old kingdom of Dahomey and are inhabited by the Fon people.

The census figures for 1921, 1926, and 1931 were 842,243, 979,609, and 1,111,906 respectively. These show increases of 16.31 per cent., 13.51 per cent., and 15.95 per cent., a fairly steady rate of growth.

Natives. The most important tribe is the Fons, unique to the

colony, who number more than 650,000. The Bariba tribe, also confined to Dahomey, has some 114,000 members, and there are almost as many Yorubas.

In 1937 there were only 233 native citizens.

Europeans. In 1937 there were 1,013 Europeans in Dahomey. This is a very low figure proportionately to the numbers of natives and compared with other colonies.

INLAND TOWNS

ABOMEY ($7^{\circ} 14'$; $2^{\circ} 01'$ E.). Altitude, 787 feet. Population, 15,042.

Provincial headquarters. Medical post. Meteorological station. Landing-ground. Protestant and Roman Catholic missions. Orphanage. Daily market.

This ancient city dates back at least to the early seventeenth century. It was burnt by the Eyos in the eighteenth century and again by its King Behanzin just before the entry of Colonel Dodds in 1892, but its red-earth walls still enclose the old town. To-day most of its population lives among the oil-palm groves which surround it, and the walls are largely in ruins. Nevertheless, numerous relics of the splendours of the ancient kingdom may be seen in an historical museum, arranged in a room of the old royal palace.

Although somewhat isolated from the main north-to-south lines of communication by the scarp that lies to its south, Abomey is the largest inland town of the colony. It is an important centre of native industry and a technical section is attached to its school. There is a vaccination centre and a cotton ginnery, while the daily market is one of the few at which dairy produce is obtainable.

A road runs south-west to Parahoué (31 miles) and the coast, while another joins the main north-south road 6 miles to the east. A narrow-gauge line (Route 1 A) connects the town to Bohicon, 6 miles to the east on Route 1. A telegraph line, running eastwards to Zagnanado, connects to the Parakou-Cotonou line and thus to northern and southern towns.

ALLADA ($6^{\circ} 41'$; $2^{\circ} 07'$ E.). Altitude, 315 feet. Population, 1,954.

District headquarters. Medical post and maternity home. Emergency landing-ground. Protestant and Roman Catholic missions.

Allada, 23 miles inland from the coast, is another ancient town, capital of the old kingdom of the same name. In 1724 it was sacked by Agadja and ceased to be of importance until the coming of the French.

The town is an important route centre and lies on the main north-south road, 23 miles from Ouidah to the south and 37 miles from Cotonou to the south-east. There is telegraphic communication along the railway with towns both to the north and to the south. The railway station is 36 miles from Cotonou and handles large quantities of agricultural produce from the fertile districts around. The emergency landing-ground has been cleared $\frac{1}{4}$ mile west of the station.

ATHIEME ($6^{\circ} 37'$; $1^{\circ} 42'$ E.). Population, 1,100. Provincial headquarters. Medical post and native dispensary. Meteorological station. Regional School. Protestant and Roman Catholic missions. Garage. Weekly market.

The town lies in the Mono valley on the border of Togo. Although a cul-de-sac as regards its roads, it is connected northwards to Parahoué (27 miles) and south-eastwards to Grand Popo (34 miles) and Ouidah (40 miles), with all of whom it is in telegraphic communication. It is also the terminus of the narrow-gauge line (Route 4) from Grand Popo, built to tap the rich agricultural resources of its region.

BOHICON ($7^{\circ} 13'$; $2^{\circ} 06'$ E.). Altitude, 538 feet. Native dispensary. Landing-ground. Market every four days.

This town is an important railway junction with narrow-gauge lines west to Abomey (6 miles) and east to Zagnanado (25 miles). Telegraph lines run to these two places, northwards to Parakou and Malanville, and southwards to the ports. Roads also connect Bohicon to all these places. A stock of petrol is held at the town. There is a cotton ginnery. The landing-ground has been built at Cana, $3\frac{1}{2}$ miles to the south.

DASSA ZOUME ($7^{\circ} 44'$; $2^{\circ} 13'$ E.). Population, 2,770. Dispensary and maternity home. Regional School. Protestant and Roman Catholic missions. Hotel. Market every four days.

This town lies almost half-way along the central railway line, being 132 miles from Cotonou and 140 miles from Parakou. Situated as it is near the junction of two main roads (Fig. 3), it has become an important centre of local produce. There is a cotton ginnery. A weekly bus service connects it to Natitingou (223 miles) via Djougou. The hotel is at the station, which also boasts a buffet.



10. *A cloud of locusts*



11. Cotonou: the wharf

DJOUGOU ($9^{\circ} 39'$; $1^{\circ} 46'$ E.). Altitude, 1,450 feet. Population, *c.* 6,000. District headquarters. Medical post and native dispensary. Meteorological station. Regional School. Rest-house.

Djougou is one of the more important towns of northern Dahomey, though smaller now than formerly. About ten years ago a sleeping-sickness survey unit was centred on the town and it is still to-day one of the chief medical centres of the north. The town is an important home of native handicrafts, and two cotton ginneries are active. The school has an experimental farm attached to it. The tourist rest-house indicates the importance of the town as a road centre, and it is served by a weekly bus service (p. 90) in either direction between Tchaourou and Natitingou, which are distant respectively 124 miles and 59 miles. The town lies on the main route from Savalou (148 miles) and the south to Natitingou and Fada N'Gourma in Niger, while other roads lead westwards to the Togo border and eastwards to the Parakou-Malanville road. There is a telegraph line both to Cotonou and to Ouagadougou.

KANDI ($11^{\circ} 07'$; $2^{\circ} 57'$ E.). Altitude, 1,004 feet. Population, 3,144. Provincial headquarters. Custom-house. Medical post. Military post. Meteorological station. Landing-ground. Wireless station.

Kandi is a centre of some importance on the Parakou-Malanville road, distant from them respectively 176 miles and 75 miles. The town, upon which several seasonal roads and tracks converge, is an agricultural centre with a vaccination post and a market every fourth day for cattle, millet, cotton, and other produce. There is an important native dyeing industry and a cotton ginnery. Lying as it does on the main north-south route, the town is connected to Cotonou and Malanville by telegraph. It has a rest-house, and the landing-ground is $\frac{1}{2}$ mile north of the town. In addition to the medical post there is a small military hospital.

MALANVILLE ($11^{\circ} 49'$; $3^{\circ} 27'$ E.). Altitude, *c.* 525 feet. Wireless station. Weekly market.

Malanville awaits the railway from Parakou to attain its full importance. Meanwhile it is the terminus of the north-south road and of the important ferry across the river Niger to Gaya. It is connected to the south by a telegraph line which follows the road as far as Parakou. A store of petrol is kept for private sale, for the weekly bus service to Tchaourou, for the ferry, and for the two

steamers that work the fortnightly river service to Niamey (189 miles) from August to May.

NATITINGOU ($10^{\circ} 15'$; $1^{\circ} 18'$ E.). Altitude, 1,509 feet. Population, 1,250. Provincial headquarters. Medical post. Military post. Wireless station. Meteorological station. Market every four days.

Natitingou is, after Parakou, the most important centre in northern Dahomey. Roads lead east to the Parakou-Malanville road (132 miles), north to Tanguiéta and Fada N'Gourma in Niger, and to southern Dahomey via Djougou. Along the last of these a weekly bus service runs via Djougou (59 miles) and Parakou (141 miles) to Tchaourou (183 miles). The town has a rest-house and a small military hospital. Telegraphic communication exists with Cotonou and Ouagadougou.

PARAKOU ($9^{\circ} 21'$; $2^{\circ} 37'$ E.). Altitude, 1,240 feet. Population, 2,736. Provincial headquarters. Custom-house. Medical post. Regional School. Landing-ground.

The importance of Parakou has been increased since it became the northern terminus of the railway in 1936, with railway workshops under a resident Railway Inspector. A rest-house and camping-ground serve the needs of passengers transferring from rail to road and vice versa, for the town also lies on the main north-south road. A weekly bus service in either direction passes through Parakou between Tchaourou (42 miles) and Natitingou, and between Tchaourou, Malanville, Gaya, and Niamey. This is the oldest regular bus service in French West Africa. There is a service garage holding a stock of petrol and a bus repair depot. The town is the residence of a P.W.D. inspector and of the doctor who is in charge of the medical post. The veterinary service has an immunization centre at Parakou, and there are three cotton ginneries. The town is connected by telegraph southwards to Cotonou (272 miles) and other southern towns, and northwards to Malanville (251 miles) by way of Nikki, an important native centre 30 miles away to the north-east.

POBE ($7^{\circ} 00'$; $2^{\circ} 41'$ E.). Altitude, 390 feet. Population, 1,954. District headquarters. Native dispensary. Meteorological station. Market every five days.

Pobe was reached by the railway from Porto Novo, 34 miles away, in March 1913 and it is still the northern terminus of that line. Only seasonal roads and tracks serve the town, those to the north-west and

north being completely cut by floods at the end of the wet seasons. Pobe is the centre of the rich agricultural area lying south-east of the Lama marsh. An experimental oil-palm station was established in 1924. A military hospital supplements the work of the dispensary.

SAVALOU ($7^{\circ} 56'$; $2^{\circ} 03'$ E.). Altitude, 709 feet. Population, 3,250. Provincial headquarters. Native dispensary and maternity home. Regional School. Roman Catholic mission.

Savalou, which lies 110 miles due north of Ouidah, is situated on the western slopes of the Agbado (Ofeo) valley, on the road from Natitingou and Djougou to the southern towns, with all of which it is connected by telegraph. A technical section is attached to its school, and there are two cotton ginneries and an experimental cotton farm.

SAVÉ ($8^{\circ} 02'$; $2^{\circ} 30'$ E.). Altitude, 656 feet. Population, 3,004. District headquarters. Custom-house. Medical post and maternity home. Meteorological station. Landing-ground. Regional School. Roman Catholic mission.

Savé lies on the railway, which reached the town in 1912. It is $84\frac{1}{2}$ miles by rail from Bohicon junction and 103 miles from Parakou. Situated in a hollow overlooked by rocky hills, the town is the centre of an important cotton-growing area and in 1931 had a cotton ginnery. The main north-south road passes through, climbing northwards alongside the railway, and there is an hotel and a service garage with a stock of petrol. Communications are further served by the landing-ground $1\frac{1}{4}$ miles south-west of the town. There is telegraphic communication northwards to Parakou along the railway and with the main towns of the south.

TCHAUROU ($8^{\circ} 56'$; $2^{\circ} 38'$ E.). Altitude, 1,001 feet. Population, 668. Medical post. Wireless station. Meteorological station. Landing-ground. Hotel. Railway workshops. Weekly market.

From 1933 to 1936 Tchaourou was the railway terminus, and to-day all but one of the passenger services still stop at the town. The railway workshops set up in 1933 still function, though less busily than before, and the town is to-day chiefly important as the starting-point of two weekly bus services to the north, the one via Parakou to Natitingou and the other to Malanville and Niamey. A stock of petrol is held. There is an hotel at the station, and the town

is in telegraphic communication with the main centres of both northern and southern Dahomey.

ZAGNANADO ($7^{\circ} 17'$; $2^{\circ} 25' E.$). Altitude, 390 feet. Population (1931), 10,079. District headquarters. Dispensary and maternity home. Roman Catholic mission. Market every four days.

Zagnanado is a large native town on a plateau between the Zou and the Ouémé rivers, and it is noted for the springs that give it the most abundant and regular water supply in the colony. Although the town is connected westwards to Bohicon by both rail and road, its market and the European agencies are at Kové, 3 miles away. An agricultural experimental station and nursery lie just outside the town.

9. ADMINISTRATION

Councils

Dahomey sends a delegate to the Supreme Council of the French Colonial Empire.

The colony's Executive Council is, under the decree of 30 March 1925, composed of the Governor, the Secretary-General, the Delegate to the Supreme Council, the Attorney-General, the officer commanding the troops, two citizens, and two subjects. The Standing Committee of this council consists of the Secretary-General, the Attorney-General, one citizen, and one subject.

Territorial Divisions

In 1938 the colony was divided into eight provinces (Fig. 7), each taking its name from its headquarters town. These provinces, their headquarters towns, and their district headquarters were as follows:

<i>Province and headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Abomey . . .	3,140	Zagnanado
Athieme . . .	1,431	Grand Popo, Parahoué
Cotonou . . .	1,305	Abomey-Calavi, Allada, Ouidah
Kandi . . .	10,850	..
Natitingou . . .	8,493	Kouandé, Tanguiéta
Parakou . . .	13,923	Djougou, Nikki
Porto Novo . . .	1,035	Pobe, Sakété
Savalou . . .	3,066	Savé

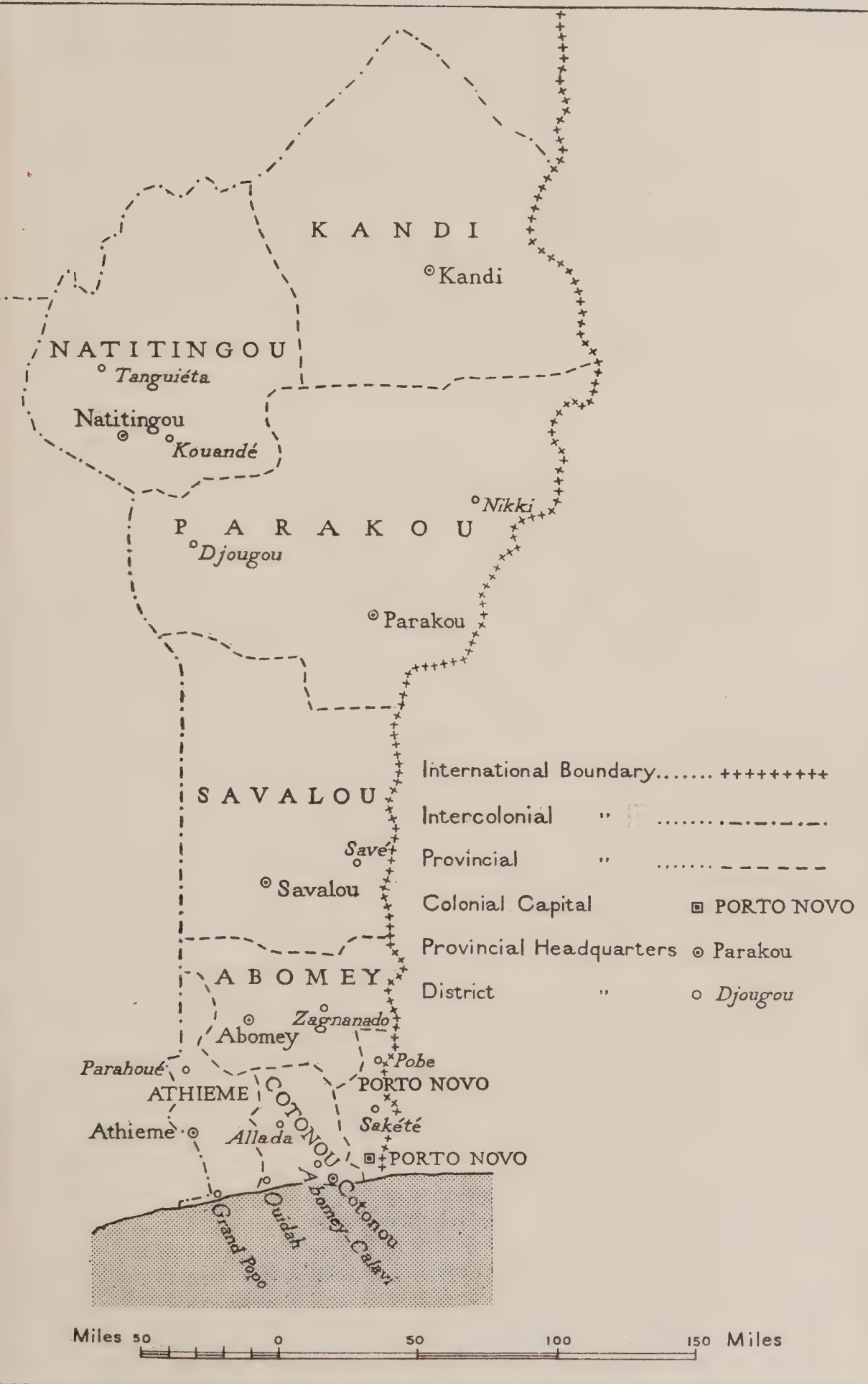


FIG. 7. Dahomey: Administrative Divisions

The average area of the provinces, 5,400 square miles, is approximately that of the total area of Northern Ireland.

Provincial Councils and Communes. In all the provinces except Abomey and Athieme the provincial commissioner has the assistance of a Council of Notables.

Porto Novo, Cotonou, and Ouidah are mixed communes, each under an administrative officer as mayor with a nominated advisory council.

The Chamber of Commerce at Cotonou, founded in 1906, functions for the whole colony. There is no separate Chamber of Agriculture and Industry.

Courts of Law

The Court of Assize, the Tribunal of First Instance, and the Colonial Court of Appeal all sit at Cotonou.

Native Organization

After the final conquest of the kingdom of Dahomey the French put only the coastal strip under direct administration. The kingdom of Porto Novo under its old rulers had been a French protectorate for some years, and Dahomey proper was divided into two similar protectorates. This system was not successful, and by 1913 the whole colony, including the kingdom of Porto Novo, had come under direct administration. From that time forward chiefs in Dahomey have been appointed in accordance with the regime that prevails in other colonies. This has not involved any great breach with past tradition, for in Dahomey proper the king had always appointed his own nominees to all provincial chiefdoms, no post save his own being hereditary. The order of 19 December 1930, which laid down the methods of appointment, the powers, and the duties of all chiefs in the colony, gave the inhabitants of each village some voice in the selection of their chief. They submit the names of three candidates to the provincial commissioner, who must, unless he sees good reason to the contrary, accept one of them. The successful candidate, however, serves on probation for his first four years. If the commissioner appoints his own nominee, he does so subject to the approval of the governor, to whom he must justify his action.

Provincial chiefs are now rare in French West Africa, but, at the time of the order mentioned above, the provincial chief of Porto Novo, a member of the old royal family, was still in office and was in receipt of a salary of 45,000 francs per annum. In the north there

were five other provincial chiefs, each with an annual salary of from 4,000 to 6,000 francs.

Land Tenure

By 31 December 1937 provisional concessions had been granted covering a mere $2\frac{3}{4}$ square miles and concessions over $4\frac{1}{2}$ square miles. At the same date 2,246 certificates of title had been granted under the immatriculation system, affecting a total area of 60 square miles. Under the Confirmation of Native Land Rights 14 certificates had been granted, covering an area of 200 acres.

Labour

In 1935 there were 336,300 on the forced labour rolls, 3,168,000 man-days were worked, and 266,900 francs were paid in redemption money. During 1936 official figures showed that 700 labourers were working under written contract for private concerns, while 1,800 were on verbal agreements. These figures included only the numbers in regular employment, and took no notice of casual labour.

Agriculture and Forestry

The Department of Agriculture maintains stations at Cotonou, Pobe, Porto Novo, Sémé, and Zagnanado and a minor station at Parakou, the headquarters of the colony's veterinary service.

There is no separate forestry service.

Native Provident Societies. By the end of 1930 a Native Provident Society had been formed in each province, and in most provinces a section for each district. In 1937 the receipts of these societies were 1,320,000 francs (£10,500) and their expenses 1,358,000 francs (£10,900), the deficit being met out of a surplus of 417,000 francs which they had had in reserve. In the coastal regions their activities naturally centre on palm products. Thousands of seeds are distributed each year, and motor crushers, whose cost (8,000–9,000 francs) would be far beyond the reach of individual farmers, are purchased and lent to members.

Inland these societies devote their energies to stock-breeding and to cotton. They provide boars and rams for the use of their members, and they have dug wells in the drier parts.

Produce Inspection. As in other colonies, produce inspection is official and is done under the aegis of the Chamber of Commerce. It extends to palm products, cotton, and copra.

Mining

Although there is no organized mining activity in the colony, at the end of 1937 there were two personal licences in force.

Education

For some years before the French protectorate was established there were English and Portuguese mission schools in the coastal towns.

In 1887 the Government introduced French missionaries and gave a grant to their schools on condition that the instruction therein should be in French. By the end of the century there were some 20 schools, 6 being for girls. They are said to have been well attended, but the numbers of pupils are not available. To-day, of course, education conforms to the general system of the Federation. In 1938 there were 30 European and 155 native teachers, and the figures for schools were as follows:

	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total pupils</i>
GOVERNMENT SCHOOLS				
<i>Primary</i>				
Village schools	55	3,087	1,319	4,406
Regional schools	11	1,753	97	1,850
Urban schools	8	1,879	127	2,006
Totals	74	6,719	1,543	8,262
<i>Higher Primary</i>	1	67	14	81
<i>Technical</i>	1	18	0	18
PRIVATE SCHOOLS				
<i>Mission schools</i>	25	4,400	2,453	6,853
Totals	101	11,204	4,010	15,214

Comparison with Other Colonies. The number of mission schools is greater than in any other colony, and the number of pupils receiving education in them by far exceeds the number in the Ivory Coast, which follows second with 2,739. Dahomey also leads the other colonies in the education of girls, having 4,000 of them on the combined rolls of government and mission schools as against some 2,200 in the Ivory Coast. Twelve out of every thousand inhabitants of the colony were at school in 1938, whereas in Senegal and Dakar, where the proportion might be expected to have been higher, only 9.5 per thousand of the population were at school. Education

authorities in Dahomey, official and private alike, may well be proud of this record.

In addition to the schools listed above, there is one special Moslem school (*medersa*) with 16 pupils and 102 Moslem schools giving rudimentary instruction.

In 1936 the colony spent 2,372,000 francs on education.

Health

The following table shows the growth of the medical staff between 1930 and 1937:

	1930	1937
Europeans		
Doctors	14	17
Nurses	8	7
Natives		
Auxiliary medical staff	9	24
Midwives	37	48
Male nurses	100	119
Female nurses	14	32
Hospitals	3	2
Subsidiary hospitals, medical stations, medical posts, and dispensaries	25	60
Beds available		
for Europeans . . . . .	..	55
for natives . . . . .	..	493
Budgetary expenditure in francs	4,126,000	5,700,000

10. PORTS

GRAND POPO (6° 17' ; 1° 50' E.). Population, 4,300. District headquarters. Custom-house. Medical post. Urban School. Protestant and Roman Catholic missions. Daily market.

Grand Popo, a small trading centre, was founded about 1727 by refugees from Ouidah. It is the only place between Lome and Cotonou (42 miles eastward) with European commercial interests. It has several warehouses and a post and telegraph office. The native quarter lies west of the warehouses, behind the ridge of sand-dunes fronting the shore. There is good anchorage in 7 fathoms. Palm oil and kernels are exported, and spirits and hardware imported. A new wharf was constructed about 1930.

Communications

Rail. Grand Popo is the terminus of Route 4 to Athieme and of Route 5 to Segboroué.

Road. Due to swamp land between Grand Popo and Ouidah, the main road between them makes a wide detour to the north.

A road from Anecho (16 miles) comes in from the west.

A road northwards leads to Athieme (36 miles) and Abomey (85 miles), with branches along Lake Ahémé and to Ouidah (25 miles).

Shipping. In normal times vessels of the Chargeurs Réunis, Elder Dempster, Fabre, Fraissinet, and Woermann lines call regularly.

OUIDAH ($6^{\circ} 20'$; $2^{\circ} 04'$ E.). Population, 12,841. Mixed Commune.

District headquarters. Custom-house. Medical post and maternity home. Military headquarters of the colony Roman Catholic Vicariate Apostolic of Dahomey, mission, and seminary. Hotel. Daily market.

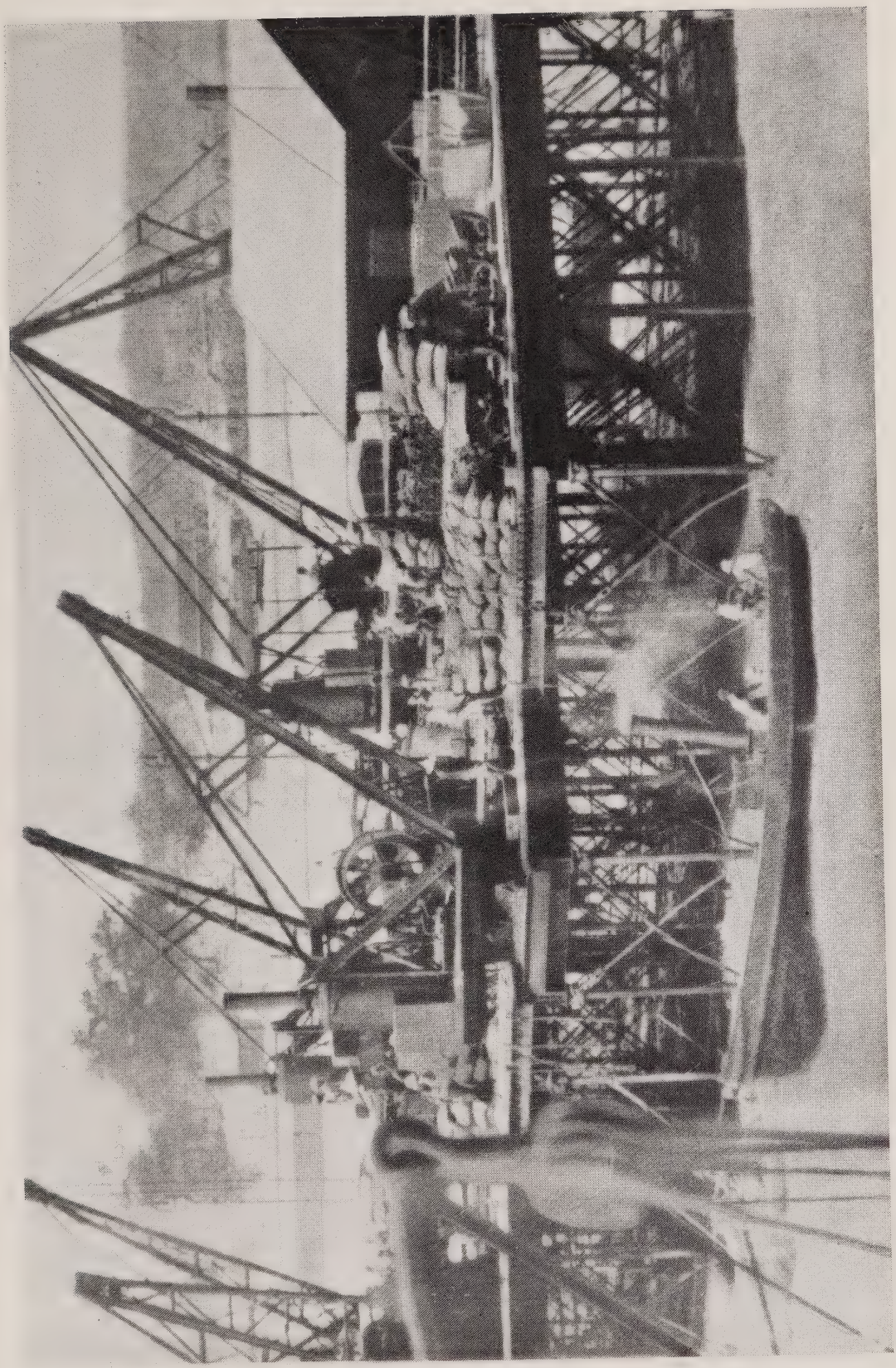
History

One of the first accounts of this part of the Slave Coast was written by William Bosman, a Dutch sea-captain, in letters sent to his directors in Europe at the end of the seventeenth century. In 1669 a French expedition, under D'Elbée, established a trading post at Ouidah with permission of the King of Allada, overlord of the King of Ouidah. In 1725 the English also had a fort there. For the next century and a half the slave trade continued to flourish and the Europeans of Ouidah conducted their business under the supervision of an officer, called the Yevogan, appointed by the King of Dahomey. By 1860, however, European opinion had hardened against the continuance of the slave trade. Dahomey was recalcitrant, and eventually, in 1892, a French expedition was sent out to restore order. The Dahomeyan army was defeated, Ouidah was annexed by France, and the remainder of the kingdom, including Porto Novo and Cotonou, was placed under French protection.

Description

The town of Ouidah, with its modern brick buildings, lies 18 miles east of Grand Popo and is on the metre-gauge line from Cotonou. It stands 3 miles from the coast, on the north shore of a lagoon. There is a post and telegraph office. A road, crossing the lagoon by an embankment, connects the town with Ouidah-Plage, which is probably the site of the early trading station. Anchorage is in 7 fathoms 1 mile from the shore.

The fame of Ouidah belongs to the past. There is now little



12. Cotonou: cranes on the wharf



13. *Cotonou: the lighthouse*

activity at the port, for trade has been largely transferred to Cotonou. It is, however, still one of the largest towns in the colony.

COTONOU ($6^{\circ} 21'$; $2^{\circ} 27'$ E.). Population (1932), 8,100. Mixed Commune. Provincial headquarters. Custom-house. Law Courts. Chamber of Commerce. Hospital and dispensary. Barracks. Police station. Belgian Vice-Consulate. Meteorological station. Wireless station. Urban School. Protestant and Roman Catholic missions. Bank of West Africa. Hotels. Garages. Railway workshops. Botanical gardens. Daily market.

Cotonou (Fig. 5), 15 miles south-west of Porto Novo, is the principal port of Dahomey, but, like all French towns on the gulf of Guinea, it has no harbour, and vessels anchor some distance off the iron pier.

History

French interest did not extend to Cotonou for some time after the kings of Dahomey had reached the coast at Ouidah. France claimed a right to the neighbourhood by reason of treaties made with Gelele, King of Dahomey, in 1868 and 1878, but it was not till 1892, after the Dahomeyan army had been defeated, that the area finally came under French jurisdiction.

The Town

The town has well-built stone buildings and is the chief centre of the European population of Dahomey. Grand Hôtel de la Plage is the most modern of its three hotels. There are various commercial stores, a post and telegraph office, a branch of the Bank of West Africa, and experimental coconut-palm gardens.

Trade

Three per cent. of the total trade of French West Africa passes through Cotonou.

The chief imports are textiles, metal goods, tobacco, and petrol. Exports are palm kernels, palm oil, shea butter, cotton, maize, and dried fish. A market suburb, Awansouri (Plate 1), $2\frac{1}{2}$ miles north, collects palm oil for export.

Description of Port

The port stands on the western side of an opening in the beach which is spanned by an iron and concrete railway and road bridge. Anchorage is in 6 fathoms 750 feet off the end of the pier.

Pier. The pier, over 400 yards long, is served by three metre-gauge

tracks, which are linked to the main railway. The pier has been constructed at right angles to the coast so that the surf, rolling in from the south-west, hits it obliquely, allowing surf boats to go to leeward.

Equipment. There are about a dozen cranes (Plate 12), with capacity up to 15 tons. There is no information about lighters and tugs, but about 500 tons of cargo can be dealt with daily.

Warehouses. The capacity of storage space is about 53,800 square feet.

Lights. The lighthouse (Plate 13) is on the beach about 200 yards east of the pier.

Communications

Rail. (a) The main railway (Route 1) runs from Cotonou to Parakou (272 miles). A branch leads westwards from Pahou junction, near the coast, to Segboroué.

(b) A line from Cotonou to Porto Novo (20½ miles) was opened in 1930.

Road. (a) To Porto Novo (20 miles). This is an excellent road, 30 feet wide.

(b) To Malanville (557 miles).

(c) Through Pahou and Ouidah to the boundary of Togo (67 miles).

(d) Through Abomey-Calavi, Tori, and Ouidah to the boundary of Togo (80 miles).

Water. About half the export trade of Dahomey is carried by canoe and flat-bottomed launch from Porto Novo to Cotonou through Toche channel and across Lake Nokoué. These canoes carry up to 80 tons.

Air. An up-to-date airfield has been constructed 3 miles west of Cotonou and close to the shore, with the railway near by and sisal plantations on either side. It is on the Aéromaritime route with a weekly service to Dakar and to Pointe Noire.

Wireless. There is a broadcasting station and communication with the interior, Togo, and the Cameroons. The station is 1½ miles west of the lighthouse.

Cable. Cotonou is connected to Libreville, Douala, and Lagos from the east and to Grand Bassam and Lome from the west. The cables land east of two blue and white beacons close to the pier.

Shipping. The port is served by the following lines: America West African, Chargeurs Réunis, Fabre, Fraissinet, Deutsches Ost-Afrika, Elder Dempster, Hamburg-Amerika, Hamburg-Bremen, Holland West Afrika, Libera Triestina, Société Navale de l'Ouest, and Woermann.

PORTO NOVO ($6^{\circ} 28'$; $2^{\circ} 38'$ E.). Population, 24,095, including 160 Europeans. Colonial capital. Mixed Commune. Provincial headquarters. Custom-house. Hospital and maternity home. Police headquarters. Meteorological station. Wireless station. Technical School. Higher Primary School. Protestant and Roman Catholic missions. Methodist college. Bank of Agricultural Credit. Power station. Prison. Hotel. Garage. Cinema. Race-course. Botanical gardens. Daily market.

Porto Novo (Fig. 5) stands on the north-eastern shore of a lagoon to which it has given its name. A company of colonial troops is stationed there. Features of interest to travellers are buildings previously occupied by the kings of Little Ardra and the oil-palm plantations outside the town. There is considerable lagoon traffic, mainly south-west to Cotonou and east to Lagos.

There is a post and telegraph office.

Trade

The principal imports are cotton cloths, gew-gaws, spirits, and tobacco, and the principal exports palm kernels, palm oil, copra, maize, and smoked fish.

The value of transit trade between Porto Novo and Lagos for the years 1936 and 1937 was as follows:

<i>Years</i>	<i>Lagos to Porto Novo</i>	<i>Porto Novo to Lagos</i>
1936	£1,883	£62,285
1937	£2,330	£235,423

Communications

Rail. Porto Novo is the terminus of Route 3 to Segboroué and is on Route 2 which goes to Pobe (45 miles).

Road. A first-class road to Cotonou runs parallel to the railway. This is part of the Accra-Lagos road (340 miles) which continues northwards from Porto Novo to within a short distance of Sakété, where it branches east into Nigeria. Several secondary roads converge on the capital from the north of Porto Novo province.

Air. The lagoon provides a good alighting area for seaplanes, and there is an airfield near the town.

Wireless. There is a government wireless station.

II. MINERALS

THE mining industry of Dahomey is unimportant, productive operations being confined to small native gold-washings in the alluvium of the northern streams. The first shipment of 11 lb. Troy of gold,

valued at 150,000 francs, was made in 1940, and came from the low country some 10 miles south-south-east of Natitingou. Considerable reserves are in sight, and a monthly production of 50–70 lb. is thought possible in the near future.

A few other mineral deposits of potential value have been discovered, but these are mostly too remote for exploitation. Rich sedimentary accumulations of rutile and ilmenite (the source of titanium pigments) are known in Upper Dahomey, especially at Djougou, at Birni, and in the Keran basin; and 10 tons were produced in 1940. On the Dahomey–Niger boundary oolitic and haematite iron ores range from 52 to 59·5 per cent. iron. In Upper Dahomey deposits of chrome ore (averages of four analyses 42·7 per cent. Cr_2O_3) form lenses in Archaean serpentine. Relatively pure limestones, which are rare in West Africa, are found in the Eocene strata near the coast.

12. AGRICULTURE

CIRCUMSTANCES have conspired to make this French colony perhaps the most forward of all the seven in agriculture. In the south, the rainfall, less than at similar latitudes in the Ivory Coast, has caused a gap in the forest belt and thrown open a much greater area, relatively, to settlement and to cultivation of the soil. As a consequence the population is denser than usual and, for the size, includes the largest proportion of big native towns in French, as opposed to British, territory. In the area which the forest belt would have covered had the rainfall been heavier the oil-palm belt continues westwards from Nigeria. In fact Dahomey is next door to the Oil Rivers, once frequented by European seamen, and shared in their early trade. These natural advantages made possible the emergence of the strong and centralized native state of Dahomey. Officials and craftsmen multiplied, and agriculture was faced with the necessity of feeding them. But, in this low-lying region, there are vast areas of alluvium laid down by the rivers and cut off by a sand barrier from the sea. If marshland and a thick and matted vegetation imposed difficulty, the soil was abundantly fertile. With such natural resources, such political organization, and such existing touch with early European adventurers the slave trade grew to very high proportions indeed. Slaves had to be fed, and so had the gangs of porters which brought produce to the beaches. It is natural that agriculture should have spread over neighbouring and less fertile ground on the plateaux and northwards as the needs of the country grew. Dahomey, therefore,

takes high rank in food production of French West Africa and reproduces the conditions obtaining in neighbouring parts of Southern Nigeria. With an area which is only 2·3 per cent. of French West Africa, and a population of 8·2 per cent., this colony is credited with 19 per cent. of the total agricultural crop, 40 per cent. of the yams, 45 per cent. of the manioc, and 37 per cent. of the maize.

From the coast to latitude 9° N. extends the manioc zone of Volume I, but in it yams and maize are extensively grown as well. North of 9° come the millets. In the south of the millet zone is a flourishing production of ground-nuts. The most important crops are therefore manioc, yams, and maize in the south and millets and ground-nuts in the north. It is not surprising to find a correspondingly low production of rice, since subsistence had already been met. The important natural, and plantation, trees are the oil palm and the coconut palm in the south, the shea-butter tree in the north, whilst the silk-cotton tree (kapok) is intermediate.

The tsetse-fly is to be found over all but the extreme north of the colony, where a few zebu herds are to be found. Elsewhere the cattle are of the humpless variety. Indeed there are fewer cattle, donkeys, and horses than in any other French West African colony and fewer sheep and goats than in any save Senegal. On the other hand, being mainly a pagan, as opposed to a Moslem, country there are more pigs here than elsewhere. As usual, the small and lean West African chicken is ubiquitous.

Food Crops

Manioc. Manioc, normally called cassava in British territories, was introduced from America during the early years of the slave trade. Since that time it has become either the staple food, or the great stand-by when other crops fail, of millions of Africans. It is one of the few crops which grows in the dry season, and it gives a comparatively high yield. It is therefore grown throughout the colony, although most generally in the manioc zone. Almost as greedy a plant as the yam, manioc (Plate 9) takes much out of the soil. The shrub itself may be 10 feet high and the cluster of tubers may weigh 30 lb. There are two kinds, sweet (*Manihot palmata*) and bitter (*M. utilis-sima*). The roots of both contain prussic acid, but those of the sweet variety quantities small enough to be expelled in the cooking. The roots of the bitter kind must be soaked in water for twenty-four hours before cooking, and the water must then be thrown away as it contains enough prussic acid to be fatal to both man and beast. The

roots are treated in several ways, of which the four following are the most usual. (i) They are boiled and pounded in mortars to make a sticky and malodorous meal (Hausa: *fufu*) used as dumplings. (ii) They are peeled, pulped, pressed in sacks, and cooked slowly. (iii) They are peeled, sliced, grated, and put into bags. Water is then poured over the bags until the contents are wet enough to be squeezed, exuding a milky fluid. This liquid is stood in bowls and the resultant sediment, when dried, is a useful starch, and also a possible source of glucose sugar and power alcohol. (iv) Before the starch is dry, it is cooked slowly, being stirred continuously to prevent discoloration by burning. The grains expand and burst, and, in this state, are what we call pearl tapioca. Flake tapioca results if the starch is spread out thinly before it is cooked.

Yams. Yams (*Dioscorea* spp.) are tubers which are planted in mounds like large molehills. A yam field is covered with these hills at intervals of about a yard. The vines which grow from them resemble hops and are trained on poles or stakes. Yams occupy the ground for most of the year, and take much out of it. The soil needs careful preparation, and the yam hills, which are often mulched with rotting greenstuff, must be kept weeded. There are many varieties of yam, and throughout the manioc zone they form a large part of native diet. Yams are immune from most local pests, except the yam beetle, which appears every few years and eats the tubers.

Maize. Maize (*Zea mays*) is a very popular native food crop. It grows at any altitude below 4,000 feet and, though loam is the best, in any soil except sand or clay. An annual rainfall of 30 inches is necessary. It is often planted as an early crop to replace the ravages of the yam beetle and to be harvested before millet. Being rich in vitamin B, maize is valuable during a food scarcity. It lacks, however, vitamin A, although the yellow variety contains more than the white. The latter is widely grown as a short-season crop. Maize requires careful cultivation, as it quickly exhausts the soil, and precautions must be taken against rust fungus. It matures in 3-4 months and grows to a height of 6-10 feet. A useful variety—sweet corn—is eaten from the cob. Other varieties are used as corn meal or cornflour, and in this event are stored in the cob until required. With storage and drying, however, native foresight ceases and both weevils and rats are generally destructive.

The shucks which cover the cobs are used for making mats and cloth and for wrapping food at markets; the stalks, cut green, are fed to cattle or dried.

Other Useful Crops

Millet, described in detail under Niger, are important in the north. Beans (the Lima or butter bean) are common throughout, though the areas of heavier rainfall are not very suitable, whilst the cow-pea is also common in the north. The rattle-pea (*Crotalaria*) is also grown fairly widely.

Ground-nuts, often cultivated between oil palms, are now an increasing and a paying crop, due more to native resource and energy than to official encouragement.

Plantains are a staple food crop here as elsewhere. The yellow mango (*Irvingia gabonensis*) with the seasoning value of its kernels, and its valuable insect-proof wood, is common in the south. Limes (*Citrus aurantifolia*) and the yellow plum (*Spondias monbin*) are found in many parts.

Oil Palm. The natives in the south of the colony have long been known for their methodical and successful cultivation of the oil palm (*Elaeis guineensis*). Under the direction of the kings of Dahomey and of Porto Novo enormous plantations of oil palms were laid out, the trees being carefully selected and looked after. These plantations are mainly in the south-east and south of the colony, in the provinces of Abomey, Athieme, Cotonou, and Porto Novo. Cultivation is almost entirely in native hands, and to-day the production of palm oil is the chief industry of the colony. Details of the method of extraction of the oil are given in Volume I, p. 325, and the colony now produces more than 50 per cent. of the palm oil and palm-kernel oil of the whole Federation, a quantity roughly equal to 7 per cent. of the output of Nigeria. The pulp of the fruit provides the oil used by the natives, and the kernels, which yield a clearer oil, are mostly exported. One tree produces about 40 lb. of fruit twice a year, and from this up to 10 lb. of pericarp or pulp oil and 6 lb. of kernel oil can be expressed; but the yield gradually declines after about 50 years. In 1938 there were 90 presses.

In 1930 it was estimated that there were at least 36,000,000 trees, covering an area of about 2,500 square miles. Since 1924 there has been a research station at Pobe, which in 1929-1930 distributed 250,000 selected trees; this figure has been steadily increased. The aim of the station is to increase the palm-oil yield of the cultivated tree to 100 per cent. above that of the wild tree. In 1937 proposals were put forward for the protection and improvement of selected wild palm plantations.

Coconut Palm. The coconut palm (*Cocos nucifera*) only flourishes in coastal areas where the annual rainfall is over 30 inches. In Dahomey it is cultivated along the whole coast and on the shores of the lagoons. There are nurseries at Cotonou, Porto Novo, and Sémé, and from the first-named 10,000–15,000 young trees are distributed annually. In 1929–1930 more than 80,000 trees were planted in the provinces of Athieme, Cotonou, and Porto Novo, and in 1930 there were 100,000 in the nursery at Sémé. All parts of the tree are useful: the wood is used for building houses or canoes, the fruit for food, the leaves for thatching, and the fibre for brushes and matting. It takes about 7,000 nuts, the fruit of some 2,000 trees, to furnish 1 ton of copra. In 1930, 6,919 acres were under cultivation, yielding 2,141 tons of nuts and 88 tons of copra. Dahomey is the only colony which exports this last commodity.

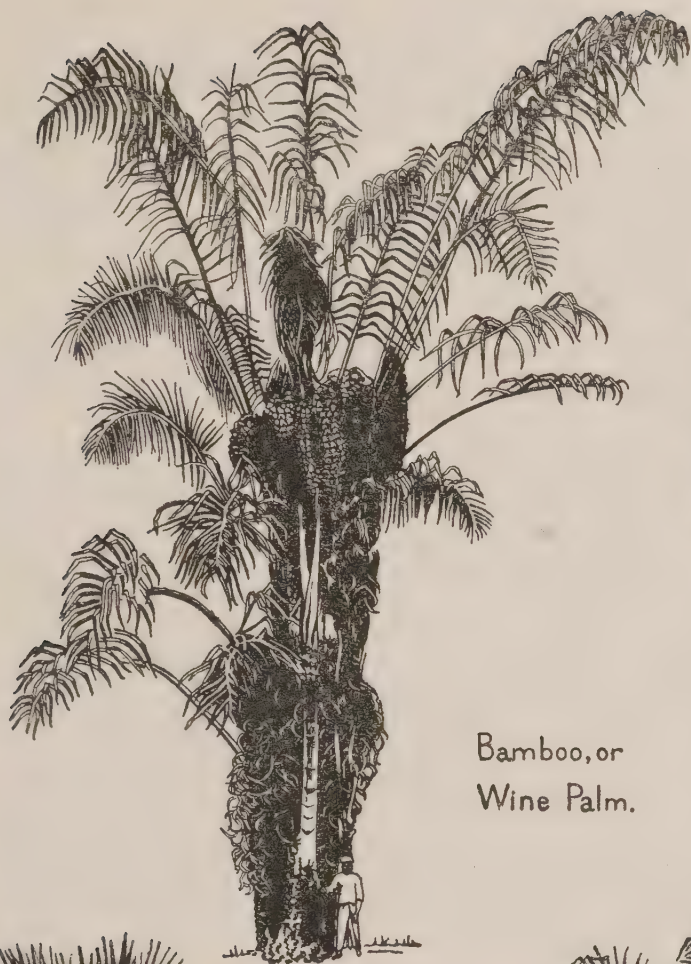
Bamboo or Wine Palm. The bamboo palm (*Raphia vinifera*) is found along river banks and in most places where there is a fresh-water swamp forest. It is not to be confused with the Asiatic bamboo (*Bambuseae*), of which there are very few in Africa. Its uses are many. The fibre or piassava is retted in running water, beaten, and combed. Thus treated, it is used locally as a weaving yarn and for making mats, hammocks, curtains, screens, roofs for canoes, costumes for masked dancers, 'horse-tails' dyed and worn by the women of some tribes, and strings for musical instruments; in Europe it is well known as bass, but it is also used in the manufacture of mats, screens, and baskets, and an inferior quality is useful as a packing material. The stems are used chiefly for a variety of useful purposes from furniture to fish-traps.

The wine is got by cutting the base of the terminal bud, and the tree dies in consequence. The wine is not as potent as that of the oil palm, but it makes a good yeast.

Castor-oil Plant. The castor-oil plant (*Ricinus communis*) grows throughout the colony, except in the north where the soil is sandy. In 1930, 4,942 acres were under cultivation, producing 1,476 tons of oil.

Silk-cotton Tree. The silk-cotton tree (*Bombax buonopozense*) is found in the provinces of Parakou, Kandi, and Natitingou, which produce 500 tons of kapok annually. Young trees are distributed from the nurseries of Porto Novo, Cotonou, and Zagnanado. Teak (*Tectona grandis* or *Chlorophora excelsa*) is also propagated at the above nurseries, which, before 1930, had distributed over 100,000 trees.

Shea-butter Tree. The shea-butter tree (*Butyrospermum parkii*) grows in savanna country anywhere north of Savalou (8° N.). In 1928



Bamboo, or
Wine Palm.



Coconut
Palms.



Borassus Palm
in Fruit.



Oil Palm.

FIG. 8. *Palm Trees*

1,305 tons of kernels and 41 tons of butter were produced. By 1937 these figures had increased to 7,853 tons and 703 tons respectively.

Indigo. Indigo (*Indigofera arrecta*) is found in the north of the colony, where 2,500 acres are given up to its growth. The leaves yield annually about 98 tons of powder, of which the natives use more than half to dye loin-cloths and cotton thread; the rest is exported.

Cotton. The colony, like the Ivory Coast, grows good quality cotton, and in 1929 produced 3 per cent. of the total for the continent, ranking seventh, with Tanganyika, in the list of African growers. The principal types cultivated for spinning are *Gossypium peruvianum* and Allen in the north, *G. hirsutum* in the centre, and *G. barbadense* (also of the Peruvian group) in the south. The average yield per acre for non-irrigated cotton is 106 lb. with 28 per cent. fibre, the length of fibre being $1\frac{1}{8}$ – $1\frac{1}{16}$ inches. Production figures for 1933–1934 and 1934–1935 were 3,920 and 4,100 bales respectively (1 bale = 478 lb.).

A variety much grown for domestic and medicinal purposes is *G. arboreum*. Its flowers are used as a black dye for leather, and the red-veined leaves and twigs are crushed and mixed with lime-juice to make a red dye for cotton thread. The leaves are soaked to provide a remedy for dysentery or crushed and applied as poultices.

Livestock

Cattle. There are only about 180,000 head of cattle in the colony. The two main varieties are the humpbacked zebu, usually owned by the nomadic tribes of the north, and a smaller, humpless breed, almost immune from the tsetse-fly, in the centre and south. This latter breed is probably a cross between the zebu and the very small cattle which seem to be indigenous to the coastal areas and which are kept mainly for dowries and ceremonies. Milk yield is nowhere high, because numbers are more important to the native than quality.

Horses. Horses, numbering fewer than 2,000 in 1938, are confined to the north.

Sheep and Goats. In the south these provide almost the only meat for native consumption, so that many of them are to be found in each village. They roam at will except during the rains, when they are kept in compounds to prevent them damaging the crops. In 1938 their number was estimated at 400,000.

Pigs. These total about 37,000 and are found in most villages in the south. Attempts have been made to improve the local breed by importing boars from Senegal, which has the best stock of all the French West African colonies.

Poultry. Every family keeps a few hens. Turkeys and guinea-fowl are also common and a large trade in poultry is carried on at all markets.

Bees. Honey is a favourite food with the natives, many of whom keep bees, putting the hives in trees.

Experimental Stations

These are as follows:

Pobe . . .	oil palm
Niaouli . . .	oil palm, coffee, and cocoa
Savalou . . .	cotton, ground-nuts, maize, and castor oil
Zagnanado . . .	coffee
Djougou . . .	cotton
Ina	animal husbandry

There are nurseries at Cotonou and at Sakété.

At Porto Novo there is an agricultural technical school. Pupils receive practical instruction at the local experimental gardens and complete their training by attending courses at Niaouli, Savalou, and Ina.

Veterinary Services. A little is being done to improve stock and to combat disease. A veterinary station is established at Parakou.

13. COMMERCE AND FINANCE

COMMERCE

The Balance of Trade. Dahomey is one of the more prosperous colonies, and carries on a considerable trade in proportion to its size. In 1938 the total value of the *Commerce Spécial* was 330,332,000 francs (£2,026,577), nearly one-twelfth that of the whole Federation. The exports commonly exceed the imports in value, and in 1938 they were twice as great. Some facts about internal trade and markets are given on p. 32.

Firms. The most important firms are the Société Commerciale de l'Ouest Africain and the Compagnie Française de l'Afrique Occidentale. In the southern towns there are stores belonging to the Société Commerciale, Industrielle, et Agricole du Haut-Ogooué of French Equatorial Africa and to the British firms of John Holt & Co. and John Walkden & Co.

Exports. In former days the colony was noted for slaves, but to-day the principal exports are the products of the palm tree and of the ground-nut plant. Palm kernels and palm oil account for more

than one-third of the colony's exports, with shelled ground-nuts coming next in value. The only other items of importance are cotton, castor-oil seed, and coffee. These reflect the success of French agricultural policy, although in no case has there been a very steady increase in production. For example, 1,373 tons of castor-oil seed were exported in 1935, 901 tons in 1936, and 920 tons in 1937.

Imports. As in most of the other colonies, the leading import is cotton cloths. These cloths have very largely replaced the native hand-made kinds, even for religious purposes. The quantities fluctuate from year to year, the figures for the years 1935-1937 inclusive being 1,045 tons, 1,991 tons, and 667 tons respectively. Metal goods and machinery are also important, being valued at 22,474,355 francs. Other imports are mainly for Europeans or for europeanized natives, including such items as oil fuel, wine, and ready-made clothing. Details of these and also of the exports are given in Appendix B.

FINANCE

The budget for 1938 balanced at 48,910,000 francs (£300,061). The official summary is as follows:

<i>Revenue</i>		
I. Ordinary Revenue		<i>Francs</i>
Direct taxes		21,114,000
Customs and excise		12,114,000
Posts, telegraphs, &c.		2,407,000
Grants and subsidies		12,517,000
Receipts from previous financial year		337,000
II. Extraordinary Revenue		
Sundry receipts		401,000
Previous withdrawals from the Reserve Bank		20,000
TOTAL		48,910,000

<i>Expenditure</i>		
I. Ordinary Expenditure		<i>Francs</i>
Debt charges		304,000
Salaries of administrative staffs		12,281,000
Other administrative expenses		2,461,000
Posts, telegraphs, &c. (salaries and wages).		5,431,000
Posts, telegraphs, &c. (plant and materials)		3,606,000
Public works (maintenance and construction)		6,984,000
Social and economic departments (salaries)		6,939,000
Social and economic departments (other expenditure)		4,671,000
Sundry disbursements		4,322,000



14. *Cotonou: the wharf from the beach*



15. *The intercolonial road near Kandi*



16. *The intercolonial road near Savé*



17. *The ferry across the Niger at Malanville*

	<i>Francs</i>
Secret funds	20,000
Unforeseen expenses	35,000
Expenditure on public works under the special programme .	1,435,000
II. Extraordinary Expenditure	
Sundry disbursements	401,000
Previous payments into the Reserve Bank	20,000
	<hr/>
TOTAL	48,910,000
	<hr/>

Like those of the Ivory Coast and of French Guinea, the public works under the special programme are not specifically known. In every other respect the budget presents no feature of interest.

14. COMMUNICATIONS

RAILWAYS

There are 381 miles (614 km.) of metre-gauge railway and 71 miles (114 km.) of 60-cm. gauge. This is a much greater mileage in proportion to area than in any other colony. The lines are arranged roughly in the form of a trident pointing inland. The two outside prongs run to Athieme and Pobe respectively, and the centre and longest one runs to Parakou.

For purposes of giving detailed information these railways have been divided into eight routes, viz.:

1. Cotonou-Pahou-Allada-Bohicon-Savé-Tchaourou-Parakou (metre).
 - 1 A. Bohicon-Abomey (60 cm.).
 - 1 B. Bohicon-Zagnanado (60 cm.).
2. Cotonou-Porto Novo-Lagbé-Pobe (metre).
 - 2 A. Lagbé-Sakété (metre).
3. Porto Novo-Cotonou-Pahou-Ouidah-Segboroué (metre).
4. Grand Popo-Adjaha-Athieme (60 cm.).
5. Grand Popo-Adjaha-Segboroué (60 cm.).

History

As in other colonies, the principal object of the first railway construction was to render it possible for the products of the interior to reach the coast, but, unlike most of the other colonies, the regions a few miles from the sea were well cultivated. Remunerative traffic, therefore, was assured from the start. The barriers presented by the lagoons and by the Lama depression have been overcome, and the line to Parakou will ultimately reach Malanville on the Niger.

Proposals to build a railway were first made as early as 1895, and many different routes were examined. It was finally decided to make Cotonou the main coastal terminus. In 1900 M. Borelli was given a contract and a government subsidy, and on 4 September 1902 the first section, that from Cotonou to Attogon, was opened to traffic. Two years later this line, the Central Dahomeyan Railway, reached Toffa, and another line was opened from Cotonou to Ouidah. By 1905 traffic was possible to Paouignan and by the following year to Segboroué. On 17 January 1908 the Central Dahomeyan Railway reached Agouagon and in 1912 Savé. In 1930 the company was bought out by the Government, and further extensions were made to Tchaourou on 29 May 1933 and to Parakou in the following year. Work ceased because of the economic crisis and has not yet been resumed. Freight charges were high at first, but they were reduced in 1904 and 1909. The latter reduction killed the competition from head porters, who had been active up to that time between Cotonou and Toffa.

The rich country to the east was untouched by the Central Dahomeyan Railway, and much of its trade was done through Lagos. The Eastern Dahomeyan Railway was accordingly built out of colonial funds from Porto Novo to Kouti. It was inaugurated on 1 April 1907 and extended to Sakété by 1 March 1908. Plans were made for it to reach Ketou, and the new branch, starting from Lagbé, was opened to Pobe on 18 March 1913. The War of 1914-1918 caused a halt, and the last section has never been completed. The vital link from Porto Novo to Cotonou had to wait until 1 June 1930.

Of the 60-cm. gauge railways the lines joining Bohicon west and east to Abomey and Zagnanado respectively were opened in 1927 and the one from Grand Popo to Athieme in 1931. The branch from Adjaha was finished in 1933.

It is difficult to believe that the adoption of two gauges was a wise policy. The narrower gauge is very little cheaper to construct and maintain, and this hardly compensates for the obvious disadvantages.

Permanent Way, Locomotives, and Rolling-stock

Rails and Sleepers. All rails are flat-bottomed. Their length is 23 or 30 feet (7 or 9 metres) and their weight is mainly 44 lb. per yard (22 kg. per metre), but those on the sections from Savé to Parakou and from Lagbé to Pobe have a weight of 61 lb. per yard (30 kg. per metre). The 60-cm. gauge rails weigh 18 or 24 lb. per yard (9 or

12 kg. per metre). The rails are fastened by steel fishplates on to pressed-steel sleepers, each weighing $70\frac{1}{2}$ lb. (32 kg.).

Gradients and Curvature. Gradients seldom exceed 1:50 except for very short stretches, and the minimum radius of curvature is 328 feet (100 metres).

Bridges. All important bridges are listed in the Itineraries. North of Atchérivé on Route 1 the masonry work is of granite blocks set in cement mortar, but south of this point concrete is used in the absence of suitable stone.

Station Buildings. There are two types of station buildings: (i) single-story, 52 feet by 13 feet, with 4 rooms; and (ii) two-story, 66 feet long with 5 rooms. Both types are built of concrete and provided with a veranda 10 feet wide. Passenger platforms are 13 feet wide and up to 300 feet long. Goods sheds are built with a central track between concrete tiled platforms. At many stations there are uncovered platforms for handling barrels of palm oil.

Locomotives. The following information refers to the numbers and types of locomotives in service in 1939.

<i>Gauge</i>	<i>Wheel arrangement and type</i>	<i>Makers</i>	<i>Loaded weight in tons</i>	<i>Number</i>
Metre	4-6-0 tank	Cail	39	3
„	4-6-0	Corpet-Louvet	39	2
„	4-6-0	Piguely	36	2
„	0-6-0 tank	Nord and Franco-Belge	30	13
„	2-6-0 tank	Weidknecht	$23\frac{1}{2}$	3
„	0-4-0 tank	Saint Leonard	18	4
„	0-6-0 tank	Corpet-Louvet	15	4
				<hr/>
				Total 31
Metre	137-h.p. railcar	Billard	14	2
60-cm.	0-6-0 tank	Decauville	10	11
	4-6-0 tank			

Carriages and Wagons. On the metre-gauge lines in 1939 there were 9 first- and second-class passenger coaches (25 seats), 35 third-class passenger coaches (43 seats), and 415 goods wagons of all types. None of the wagons had a capacity of more than 10 tons. On the 60-cm. gauge lines there were 16 passenger coaches and 107 goods wagons.

State of Repair. As elsewhere in the Federation, the present condition of the permanent way and rolling-stock is not very good. Material for repairs is in short supply and none is available for extensions.

Traffic

The following figures give some indication of traffic in 1937 and 1938. The principal items of freight were maize, palm kernels, and ground-nuts.

	1937	1938
Passengers . . .	1,062,225	1,044,502
Passenger miles . .	29,016,931	30,897,086
Freight in tons . .	108,804	123,189
Ton miles . . .	8,718,220	8,844,213
Revenue . . .	£83,834	£71,747

Route 1

COTONOU-PAHOU-ALLADA-BOHICON-SAVÉ-TCHAOUROU-
PARAKOU

This is the longest and most important route of all. Its history has been given above, and the planned extension will go by N'Dali, Kandi, and Guéné to Malanville. The general course of the line is noteworthy in that it avoids the river valleys. The normal time taken by a passenger train from Cotonou to Savé is 12 hours including stops, and another 12 hours from Savé to Parakou. Very few passenger trains run beyond Tchaourou.

Distance from Cotonou		Elevation in feet	Stations	Itinerary
Km.	Miles			
0	0	16	COTONOU	The siding, 1,968 feet long, leads to a wharf used for unloading machinery. There are engine sheds, a turntable, a goods shed, and a 30-ton weighbridge.
4	2½	25	CADJEHOUN (halt)	..
11	7	23	GODOMEY	The line runs west at first along the sandy littoral amid groves of palms and coconuts.
19	12	25	COCODJI (halt)	..
26	16	26	PAHOU	At Pahou there is a goods shed and a 20-ton weighbridge. Route 3 continues westward; but Route 1 turns north, crosses the Ahouangan lagoon by an embankment 66 feet high, and reaches the mainland.
29	18	..	ADJARA	

<i>Distance from Cotonou</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
36	22	..	ACADJAMÉ (halt)	It proceeds along fertile country. The line rises slowly but steadily, maintaining a generally northern direction.
40	25	125	TORI	
44	27	..	DOÏNOKO (halt)	
46	28½	..	TORI-KADA	
58	36	312	ALLADA	
66	41	..	ATTOGON	..
71	44	..	HINVI	..
75	46½	463	OUAGBA	..
79	49	535	..	This is the highest point of this section of the route. From here there is a steep descent with a gradient of 1:10 in some places. The line turns north-west and then curves round west and finally north to cross the western end of the Lama marsh. At this point the marsh is some 8 miles wide.
88	55	197	TOFFA	
100	62	..	TCHITO	
104	64½	..	KISSA (halt)	
110	68	..	OUANSOUGON	
122	76	..	KINTA	After leaving Kinta the railway bends north-east to avoid the hills on whose summit stands Abomey. Even so, it has to climb to reach Bohicon, and it remains on the top of the higher land for some 20 miles. At Bohicon is the junction for Routes 1 A and 1 B.
125	78	..	ZOUMBO (halt)	
130	81	..	CANA (halt)	
136	84½	538	BOHICON	
141	87½	..	SAVAKON (halt)	
145	90	..	PASSAGON	..
153	95	830	DAN	From Dan onwards the line begins to go down the side of the Zou valley.
163	101	..	DIVIJI (halt)	
173	107½	..	SETTO	..
184	114	220	ATCHÉRIBÉ	..
186	115½	The Zou is crossed by a viaduct. This has 3 steel spans of 66 feet (20 metres) supported on masonry piers of 39 feet

<i>Distance from Cotonou</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
				(12 metres). The reason for the height of the piers is that the river is liable to flood. Rising from the valley, the line enters more hilly country of granitic formation.
193	120	..	BEDVA	
202	125½	598	PAOUIGNAN	..
212	132	574	DASSA ZOUME	..
224	139	652	HENHIMÉ	The railway now runs from 3 to 4 miles east of the road and at a lower level.
236	147	..	KOSSO-KAMÉ	..
242	150	..	GLASOUÉ	
248	154	646	AGOUAGON	Agouagon is an important market town and stands in a fertile plain. From this the line turns east and descends sharply to cross the Ouémé by a steel viaduct of the same design as that across the Zou. It is also used by the road.
259.5	161	..	..
261	162	..	OUÉMÉ	The line follows a more north-easterly course and constantly gains height. It is to the west of the road.
272	169	656	SAVÉ	
284	176½	..	DIHO (halt)	..
294	183	..	OUAGUI (halt)	Between Ouagui and Halafia the railway crosses the road twice, and then resumes its northward direction for the rest of its course.
299	186	..	HALAFIA	
312	194	..	GOGORO	
322	200	..	AYÉGOU (halt)	The railway goes over the road once again between Ayégou and Kokoro. Broadly speaking, the line runs close to the watershed and crosses the heads of the secondary valleys which drain westwards to the Ouémé. It ascends a gently rising plateau.
326	202½	..	KOKORO	The line goes over the road twice more before reaching Tchaourou.
337	207	..	YAOUI (BISSIM)	
341	212	..	KILIBO (halt)	
355	220½	..	TOUI (halt)	
367	228	..	GOUTODO (halt)	

<i>Distance from Cotonou</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
384	239	1,001	TCHAUROU	Tchaourou is the normal terminus for passengers, only one mixed train a week being available for them beyond this.
390	242	..	GUINI (halt)	The line continues to climb for the remainder of its journey.
396	246	..	TEKPARA (halt)	
411	255	..	TCHATCHOU (halt)	
428	266	..	BAPEROU (halt)	
438	272	1,240	PARAKOU	..

Route I A

BOHICON-ABOMEY

Abomey stands on a hill, so that the main line could not easily be taken through it. The 60-cm. gauge line was built to provide a connexion.

<i>Distance from Bohicon</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	538	BOHICON	The line proceeds in an almost straight line westwards up the steep gradients to Abomey.
6	3 $\frac{3}{4}$	..	DJIMÉ	
10	6	787	ABOMEY	

Route I B

BOHICON-ZAGNANADO

The same considerations apply to this route as to Route I A.

<i>Distance from Bohicon</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	538	BOHICON	The line runs a little north of east, crosses the Zou, and turns slightly south-east to enter Kové. It then turns abruptly north-east to climb to Zagnanado.
32	20	..	KOVÉ	
40	25	390	ZAGNANADO	

Route 2

COTONOU-PORTO NOVO-LAGBÉ-POBÉ

There can be no doubt that this route has achieved its purpose of tapping the productive lands of the eastern part of the colony. This has been demonstrated by the increase in the size of Porto Novo.

<i>Distance from Cotonou</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	16	COTONOU	After crossing a steel bridge some 300 feet (over 90 metres) long, the line keeps parallel with the road and the shore. It then curves round to the north and crosses Porto Novo lagoon by a rail and road bridge (Plate 18). This consists of 29 steel spans of 39 feet (12 metres) each, supported on reinforced-concrete pile trestles.
7.5	4½	16	AGBLANGANDAN	
20	12	17	SÉMÉ	
33	20½	5	PORTO NOVO LAGUNE	The Lagune station and the depot are on the south-west side of the town. The line makes a semicircle to run past the race-course and to reach the Nord station.
35	22	10	PORTO NOVO NORD	It then runs north to Atchoupa, north-east to just beyond Adjara Marché station, and sharp north-north-west and parallel to the Adjara river to Adjara Lagune station. The marshy river is crossed by an embankment running north-north-east, and the line takes a right-angle turn to reach Avrankou. Beyond this it runs north-north-east to Bozoumé and north-west to Kouti.
37.5	23	..	DJEGAN-PÉVI	
40	25	..	ATCHOUPA	
44	27	..	ADJARA MARCHÉ	
45.5	28	..	ADJARA LAGUNE	
48	30	..	AVRANKOU	
52	32	..	BOZOU MÉ	
53	33	..	SELIGON	
55	34	..	KOUTI	
58	36	..	KO	It then goes by a north-easterly curve to a point



18. *The Porto Novo bridge*



19. *The bridge into Grand Popo*



20. *A granite tor near Guékédou*



21. *The Nimba mountains*

<i>Distance from Cotonou</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
60	37	..	BANIGBÉ	1 mile beyond Banigbé, and finally resumes its generally northward course. North of Adjara the line is everywhere less than 5 miles from the Nigerian boundary. There are no important bridges, but depressions running east and west, which often become swamps in wet weather, are crossed by embankments nowhere exceeding a height of 23 feet (7 metres) and pierced by culverts.
64	39½	..	LAGBÉ	Route 2 A branches off to the north-west. Beyond Lagbé the line rises rather more considerably and the palm-trees thin out. The maximum gradient, however, is never more than 1 : 50.
69.5	43	..	BOKOUTOU	..
72	45	..	AGUIDI NORD	..
79	49	..	ILLACO	..
83	51½	..	IPEGUILÉ	..
88	54½	..	FOUDITI	..
95	59	410	OKO-OKARÉ	After leaving Oko-Okaré the line falls gradually on the southern slope of the Lama depression. It describes a horseshoe bend round a hill and enters Pobe from the north-east.
108	67	386	POBE	

Route 2 A

LAGBÉ-SAKÉTÉ

As has already been stated, this line was part of the original Route 2.

<i>Distance from Lagbé</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	..	LAGBÉ	The line runs north-west, on the west side of the marsh, to reach Sakété, its terminus of 1908.
3.5	2	..	AGUIDI SUD	
10	6	246	SAKÉTÉ	

Route 3

PORTO NOVO-COTONOU-PAHOU-OUIDAH-SEGBOROUÉ

This route serves to connect the west with the centre of the colony. As it is entirely in the coastal lowlands, gradients are gentle.

<i>Distance from Porto Novo</i>		<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	5	PORTO NOVO LAGUNE	This route follows Route 2 as far as Cotonou and Route 1 from Cotonou to Pahou.
33	20½	16	COTONOU	
44	27	..	GODOMEY	..
52	32	..	COCODJI (halt)	..
59	36½	26	PAHOU	From Pahou the line runs a little south of west, roughly parallel with the coast, until it is at Ouidah, but it turns west-north-west shortly after the town. This direction is roughly maintained until 1 mile before Nazoumé halt. At this point it turns due west. The halt is 2 miles north-north-east of the village and is the highest point of the line. The latter descends until it almost reaches the shore of Lake Ahémé, and then turns sharply for the last half mile of its course.
64	40	..	AHOZON (halt)	
67.5	42	..	ADJIOVICODJI (halt)	
73	45	29	OUIDAH	
78	48½	..	ASSOGBENOU (halt)	
87	54	92	NAZOUMÉ (halt)	
91	56½	16	SEGBOROUÉ	

Route 4

GRAND POPO-ADJAH-ATHIEME

This route was intended to do for the Mono valley what Route 2 had done for the eastern districts, but, so far, it has not been so successful. There are no steep gradients.

<i>Distance from Grand Popo Km.</i>	<i>Miles</i>	<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
0	0	..	GRAND POPO	The line crosses a branch of the coastal lagoon and curves north to reach Hévé. It then goes over the Mono, and continues northward to Adjaha, the junction for Route 5. From this place forward the line runs in a generally north-north-westerly direction. It uses the Mono valley, but keeps from a hundred yards to 3 miles away from the actual bank of that swampy river.
2	1 $\frac{1}{4}$	10	HÉVÉ	
10	6	16	ADJAHA	
20	12 $\frac{1}{2}$	29	DJANGLAMÉ	
23	14	..	SAGUÉ	
30	18 $\frac{1}{2}$	..	OUMPON
41	25 $\frac{1}{2}$	..	DJONOUGUI
47	29	..	ATHIEME	..

Route 5

GRAND POPO-ADJAHA-SEGBOROUÉ

This 60-cm. line links Grand Popo with the metre-gauge Route 3. The gradients are even gentler than those of Route 4.

<i>Distance from Grand Popo Km.</i>	<i>Miles</i>	<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
0	0	..	GRAND POPO	The course of Route 4 is followed as far as Adjaha. After leaving Adjaha the line turns north-east, but it curves a little south to avoid Lake Ahémé and to cross the Aho river. It then twists a little, but takes a north-easterly direction to run alongside Route 3 for the last 1 $\frac{1}{4}$ miles of its course.
2	1 $\frac{1}{4}$	10	HÉVÉ	
10	6	16	ADJAHA	
17	10 $\frac{1}{2}$	49	PAGBLÉ	
22.5	14	..	..
27	17	16	SEGBOROUÉ	

ROADS

THE main road system of the colony (Fig. 9) is in the form of a letter Y with two cross-bars. The base of the Y is at Cotonou, the

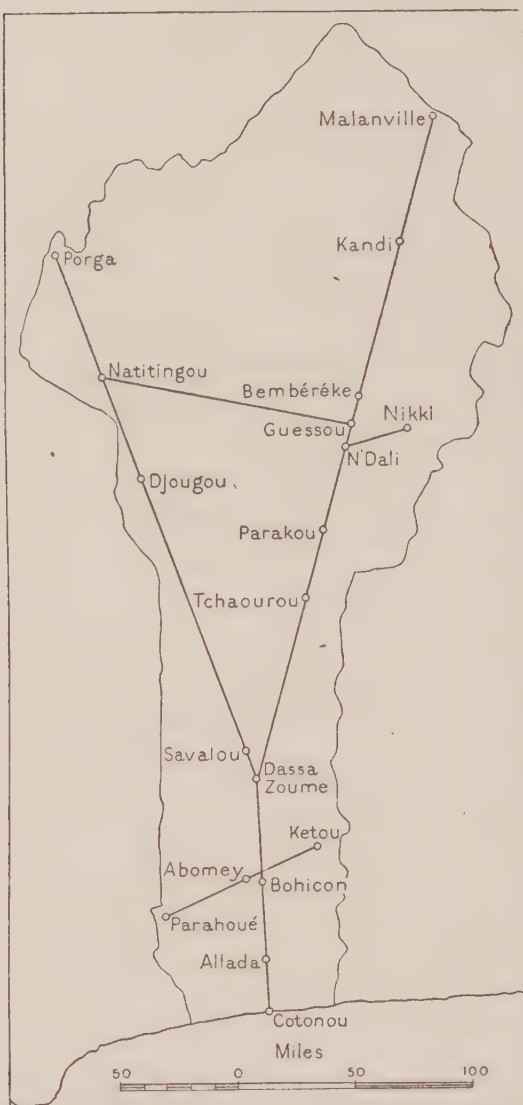


FIG. 9. *Dahomey: Diagram of Roads*

fork is at Dassa Zoume, and the two arms extend respectively to Malanville and to the Niger boundary beyond Porga. The cross-bars run from Parahoué to Ketou and from Natitingou to Nikki. There is also a number of coastal roads, which have been described in the section on the coast. The chief of these is the intercolonial road from Porto Novo to Lome. In addition, there are many poor roads and tracks in many parts of the colony. Some of these are very old, where the head porters and slaves of the centuries have trod, and others are new or serve purely temporary purposes.

In the following paragraphs some details are given of these main routes. Precise information, even if available, would not always be of great value, for many of the roads have no permanent course. They are liable to make detours to avoid obstacles or damaged sections. The best of them, except near the towns, are not well made

by European standards. They have no proper foundations, and the metal is usually carried to the roads in baskets and spread by native gangs. In the south the gravel found at Comé is principally used, in the centre laterite, and in the north granite and gneiss. None of these is taken any great distance from where it is quarried.

Itineraries

The most important road starts from Cotonou, crosses the Ahouangan lagoon 9 miles east of the railway, and runs near the west shore of Lake Nokoué to Abomey-Calavi (10 miles). It then turns

north-west to Allada (37 miles), north to Ouagba (48 miles), and north-east to Kpome (61 miles). This last turn is to enable the road to cross the Lama depression at a practicable point. Two miles north of Bohicon (90 miles) is the cross-road for Parahoué and Ketou. The Zou is crossed at Atchéribé (117 miles), and the next town of any importance is Dassa Zoume (137 miles). Seven miles farther north-west the road to Porga forks off, but the Malanville road bends north-east to cross the Ouémé at the town of the same name (172 miles) and to arrive at Savé (181 miles). From Ouémé to Tchaourou (254 miles) and Parakou (296 miles) it is never far from the railway. At N'Dali (342 miles) a road branches east to Nikki, and at Guessou (360 miles) another one branches west to Natitingou. Running slightly east of north, the road (Plate 8) reaches Bembéréké (380 miles) and Kandi (482 miles). It then turns more definitely north-east for its downhill journey to Guéné (546 miles) and Malanville (557 miles). At the latter place there is a ferry (Plate 17) across the Niger to Gaya. The whole of this long and important road is intercolonial.

The second road is that from Cotonou to Porga. It leaves the Malanville road 7 miles beyond Dassa Zoume (137 miles). This is just before Savalou (153 miles), after which place the road turns north to Agoua (180 miles), north-north-west to Bassila (244 miles) and Bodi (270 miles). From Bodi there is fair road north-west to Dompago, but the main road goes to Djougou (301 miles) and then to Birni (331 miles). At Natitingou (360 miles) there is the cross-road east to Nikki. The main road continues north-west through hilly country to Tanguiéta (386 miles) and Porga (426 miles) and to the Pendjari river (430 miles), the border of Niger. Fada N'Gourma lies 104 miles beyond.

The first cross-road starts at Parahoué, runs north-east to Abomey (31 miles), crosses the main road at 37 miles, 2 miles north of Bohicon, and goes east to Kové (62 miles). It then turns north-east to Zagnanado (65 miles), crosses the Ouémé at 69 miles, and finally climbs to Ketou (89 miles).

The second cross-road starts at Natitingou and pursues a rather twisting course to Kouandé (34 miles). It then crosses the valleys of several streams to reach Tobré (65 miles), and turns north-east to Sinendé (94 miles). After many changes of direction the road arrives at Soka (122 miles) and curves north-east to Guessou (132 miles). The main road is followed southwards to N'Dali (150 miles). The cross-road then turns sharply east to Biro (169 miles) and Nikki (180 miles).

These last three roads are all colonial.

Bus Services

In normal times there are three bus services. One starts at Tchaourou and goes via Parakou to Malanville, thence by ferry across the Niger, and so to Niamey. This connects with the steamer service of the central Niger. The other is from Tchaourou and Parakou to Djougou and Natitingou. Both supplement the train service between Tchaourou and Parakou. A bus leaves Tchaourou at 5.00 a.m. each Thursday and reaches Gaya at 4.35 p.m. on the same day. Leaving Gaya at 5.00 a.m. on Friday, it arrives at Niamey at 12.40 p.m. The return bus leaves Niamey at 5.00 a.m. each Thursday and arrives at Tchaourou at 4.35 p.m. on the Friday. Another bus leaves Tchaourou at 5.10 a.m. each Thursday, stops at Djougou at 10.10 a.m., and is at Natitingou by 12.35 p.m. It returns the following day, leaving Natitingou at 5.10 a.m. and arriving at Tchaourou at 12.35 p.m. The third service runs weekly between Dassa Zoume, Djougou, and Natitingou.

SIGNALS

Cables

Cables connect Cotonou to Lagos, Libreville, Lome, and Grand Bassam. In 1939 to send a message to France cost 24.15 francs (2s. 9d.) a word.

Telegraphs and Telephones

Telegraph lines are run alongside the railways and also along two main roads: from Dassa Zoume to Natitingou and the border of Niger beyond Porga, and from Parakou to Malanville. There is telephonic communication between Porto Novo, Cotonou, and Lome, and between Porto Novo and Pobe. The standard of efficiency is low.

Wireless

There are stations at Cotonou, Dassa Zoume, Kandi, Malanville, Natitingou, Porto Novo, and Tchaourou. Details are given in Table V. Cotonou is the sole broadcasting station. In 1939 radio-telegrams to France cost 19.90 francs (2s. 3d.) a word.

Postal Services

A letter by air mail used to leave Toulouse on the Sunday and to arrive at Cotonou on the Wednesday. Internal postal services are somewhat irregular, especially away from the railways.

TABLE V. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Cotonou . . .	6° 21' N. 2° 26' E.	3 medium 8 short	1 0·75 0·5 0·25 and unknown	Coast, commercial, and broadcasting stations, with service to the interior, to the French Cameroons, and to Togo. One station is in touch with the Benin- Niger network. Broad- casting during evening at 0·35 kW. instead of 0·5 kW.
Cotonou Aéradio and Aérogonio . .	6° 21' N. 2° 26' E.	2 medium 3 short	0·5 0·4	Aeronautical and direc- tion-finding station.
Dassa Zoume . . .	7° 44' N. 2° 11' E.	1 short	0·002	Commercial station. Interior service.
Kandi . . .	11° 07' N. 2° 57' E.	1 short	0·075	Commercial station. Interior service.
Kandi Aéradio . .	11° 07' N. 2° 57' E.	1 medium 2 short	0·15 0·075	Aeronautical station.
Malanville . . .	11° 49' N. 3° 27' E.	1 short	0·25	Commercial station. Service for the Benin- Niger network.
Natitingou . . .	10° 16' N. 1° 20' E.	1 short	0·075	Commercial station Interior service.
Porto Novo . . .	6° 29' N. 2° 39' E.	1 short	0·002	Government station. Interior service.
Tchaourou . . .	8° 57' N. 2° 39' E.	2 short	0·25	Commercial station. Service for the Benin- Niger network.
Tchaourou Aéradio and Aérogonio . .	8° 57' N. 2° 39' E.	3 medium 4 short	0·15 0·1	Aeronautical and direc- tion-finding station.

APPENDIX A

Changes in the Government of Dahomey, 1845-1937

- 1845, Dec. 8. Supervision of all French establishments from Goree as far south as Gabon removed from the Governor of Senegal and given to the naval commander-in-chief of the West African station with headquarters at Goree.
- 1859, Feb. 26. Decree placing these settlements under the Governor of Senegal.
- 1879, Feb. 4. Decree placing the ceded territory of Cotonou and the French settlements of the Bight of Benin under the naval commander of Gabon.
- 1886, Aug. 4. Decree placing the French settlements of the Bight of Benin under the Lieutenant-Governor of the Rivières du Sud with headquarters at Conakry. The Lieutenant-Governor himself responsible to the Governor of Senegal.

- 1889, Aug. 1. Decree giving the French settlements of the Bight of Benin (i.e. in Dahomey) fiscal autonomy. The budget to be prepared by the Resident and to be submitted for approval to the Lieutenant-Governor of the Rivières du Sud.
- 1891, Dec. 17. The colony of the Rivières du Sud (still including Dahomey) declared independent of Senegal under a Governor, but Dahomey given its own Lieutenant-Governor.
- 1893, March 10. Decree making Dahomey, under the title of Benin, independent of the Governor of the Rivières du Sud.
- 1894, June 22. Decree changing the name of the colony to 'Dahomey and its Dependencies'.
- 1899, Oct. 17. Decree including Dahomey in the Federation of French West Africa under the Governor-General.
- 1902, Oct. 1. Decree giving the officers in charge of colonies the title of Lieutenant-Governor.
- 1937, June 14. Decree restoring the title of Governor to these officers.

APPENDIX B

Principal Imports and Exports

	1935		1936		1937	
	Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
<i>Exports</i>						
Shelled ground-nuts . . . tons	1,988	2,460,927	3,909	5,282,094	8,808	10,787,061
Palm kernels . . . "	60,157	27,884,481	73,563	47,842,665	46,455	51,564,687
Palm oil . . . "	23,527	16,969,723	24,561	26,276,388	14,830	28,831,469
Cotton . . . "	1,122	3,713,955	932	2,127,901	1,054	6,133,646
Castor-oil seed . . . "	1,373	876,769	901	617,194	920	832,371
Coffee . . . "	55	271,916	177	711,179	176	870,435
<i>Imports</i>						
Cotton cloths . . . tons	1,045	14,842,415	1,991	32,022,315	667	20,767,603
Sail-cloth, tarpaulin, and sack-cloth . . . "	1,352	2,898,036	1,427	3,003,732	1,238	3,695,005
Metal goods . . . "	..	6,319,044	..	10,498,623	..	14,524,005
Machines and machinery . . . "	..	2,007,436	..	1,762,892	..	4,044,230
Iron goods . . . tons	922	1,108,136	1,964	2,052,103	2,158	3,906,120
Motor vehicles . . . Nos.	165	1,806,550	271	4,680,551	169	3,829,706
Ready-made clothing . . . tons	40	1,071,601	40	904,705	12	567,253
Wine . . . gallons	122,780	1,172,456	170,282	1,272,581	152,374	2,254,568
Oil fuel . . . tons	2,262	1,258,886	4,438	2,431,301	5,402	4,938,211
Leaf tobacco . . . "	..	..	..	..	511	5,149,105



FIG. 10. French Guinea

CHAPTER III

FRENCH GUINEA

I. GENERAL

Area: 96,911 square miles. Population (1937): 2,065,527. Density per square mile: 21.31. Capital: Conakry.

FRENCH GUINEA is a colony of remarkable highlands, which lie east of Portuguese Guinea, of its own much indented coast, of Sierra Leone, and of the westernmost third of Liberia. Fouta Jalon and the Guinea Highlands are almost wholly within its borders. As the crow flies, its coastline is only 170 miles, or roughly the distance from Portsmouth to Plymouth; but inland the colony stretches for 480 miles from north-west to south-east along its mountain blocks, and its greatest breadth, approximately at latitude $10^{\circ} 30' \text{ N.}$, is 440 miles. The headwaters of the Niger and of its important tributary the Milo rise in the Guinea Highlands, and those of the Senegal and the Gambia in Fouta Jalon.

Boundaries. In the north-west French Guinea provides half the land frontier of Portuguese Guinea. Starting at latitude $10^{\circ} 57' \text{ N.}$, longitude $15^{\circ} 10' \text{ W.}$, opposite the largest of the Tristao islands, the boundary runs north-east for 65 miles and then east for 40 miles between the Corubal and Kogon rivers. It then goes north for 70 miles to reach the point at which the boundaries of Senegal, French Guinea, and Portuguese Guinea meet. In the centre of this stretch a bulge westwards into Portuguese Guinea leaves Kade within French territory, and part of the boundary here is defined by the Corubal. Between French Guinea and Senegal the line runs along the foothills of Fouta Jalon for 150 miles eastwards, until it reaches the Balin Ko. Turning south for 25 miles, up the river, the boundary curves eastwards again for another 150 miles, and then winds southwards for 65 miles to the Niger, leaving the north-eastern spurs of Fouta Jalon to French Sudan. For 280 miles southwards French Sudan and the Ivory Coast lie to the east. The line takes advantage of the Sankarani, Gwala, and Feredougouba rivers, but is very sinuous and a matter of administrative convenience only. At latitude $7^{\circ} 35' \text{ N.}$, longitude $8^{\circ} 28' \text{ W.}$, on the Nimba mountains, is the common point of the Ivory Coast, French Guinea, and Liberia.

Turning north-west the boundary runs for 220 miles in very irregular fashion, sometimes along rivers such as the St. John and Diani, sometimes along old tribal frontiers, to meet the extreme west of Sierra Leone. For a space the Anglo-French boundary takes advantage of the Moa and Meli rivers, but then, still north-westerly, it defines the watershed between the Niger and the rivers of Sierra Leone, leaving considerable blocks of the Guinea Highlands within the latter. Turning west along the 10th parallel, the boundary cuts across the Mongo and Kaba rivers, bends slightly to the south to reach the Great Scarcies, and follows that river south-west to within 35 miles of its mouth. Keeping north of it from there, the boundary reaches the sea near Sallatouk point in latitude $9^{\circ} 03' N.$ and longitude $13^{\circ} 19' W.$

2. PHYSICAL DESCRIPTION AND GEOLOGY

BETWEEN latitudes 7° and $13^{\circ} N.$, and, on the average, 60 miles inland from the Atlantic, a great stretch of mountain and plateau rises to cut off the central plains of French West Africa from the coast. Around its higher parts, broad flat steps, skirted by abrupt scarps, lead down to the plains. Nearly 500 miles long from north-west to south-east and 150 to 200 miles across, this great feature lies almost entirely within French Guinea. In area it covers 66,000 square miles above 1,500 feet in height, and 5,000 square miles above the 3,000-foot contour. Its highest summits rise to 6,000 feet. Its heavy rainfall, deep and densely forested valleys, and broad, flat, infertile surfaces make this feature unique in the Federation. At latitude $10^{\circ} N.$, opposite the north-east corner of Sierra Leone, the massif is wasp-waisted and almost cut in half by the headwaters of the Niger on the east and those of the Mongo on the west. The north-western half, lying immediately behind the coast of French Guinea itself, earlier explored and well mapped, has long been known as Fouta Jalon (Fouta Djallon). The south-eastern half is referred to in these volumes as the Guinea Highlands.

In French Guinea, between the massif and the sea, lies a coastal plain. The submerged valleys, the island remains of old deltas, and the mangrove swamps of the seaboard rise to a sandy plain some 30 miles broad and about 500 feet in altitude before the lowest scarps are reached. In two places, Cape Verga and Conakry, Fouta Jalon thrusts rocky spurs to the sea, dividing the plain into three portions.

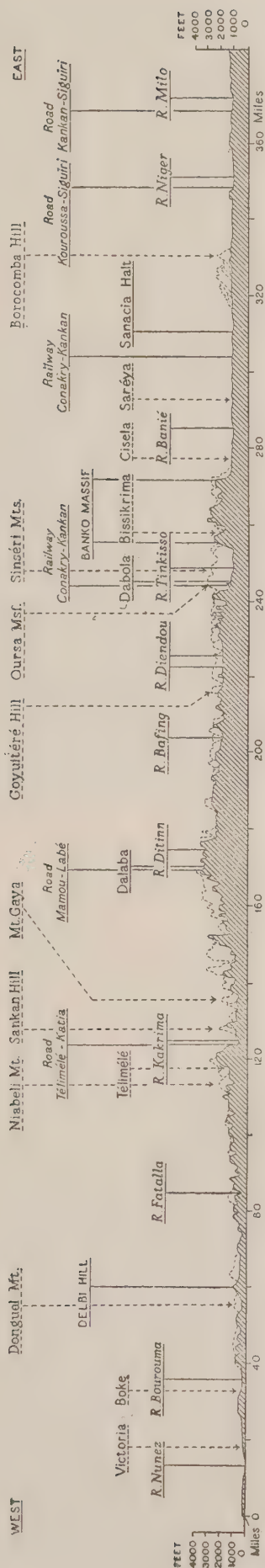


FIG. 11. French Guinea: Section from West to East along Latitude $10^{\circ} 45' N.$

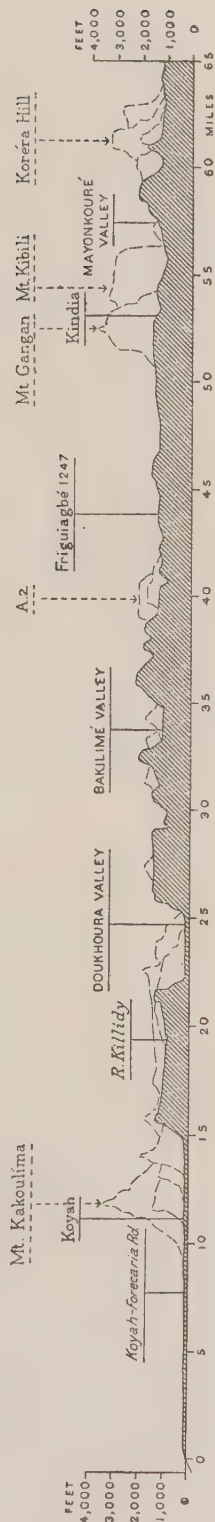


FIG. 12. A Typical Section of Fouta Jalon

On the east the broad plain of the Niger and its upper tributaries, sinking to 1,000 feet, cuts into the hills, which send spurs north-east into French Sudan and south-east into the Ivory Coast.

The description which follows will start with the comparatively small coastal region, will deal successively with Fouta Jalon and the Guinea Highlands, and will end with the Niger plain.

The Coastlands

The coast of French Guinea lies in the centre of that stretch, from Dakar to Monrovia, in which currents alternate, the monsoon blows directly onshore, and tidal rise is, for West Africa, abnormally high. Together with land submergence these factors combine to prevent the formation of sand barriers and lagoons. Muddy estuaries indent the coastline; and the submerged deltas of the Kogon (whose estuary is the Compony), the Tiguilinta (becoming the Nunez), the Fatalla (entering the sea as the Pongo), the Konkoure, the Great Scarcies, and some minor streams end in islands or in marshes cut by tidal creeks (*marigots*). Mangrove swamps line the muddy banks. Between the Nunez and the Pongo a ridge of schists and quartzites reaches the sea and ends in the cliffs of Cape Verga. At Conakry a finger of rock, jutting south-west from Fouta Jalon, ends in the granite headland, sheltered by the outlying Los islands, which, together, make the natural harbour. Inland of the silts, marshes, and mangroves of these old deltas lies a flat and sandy plain, widely flooded after rain. This plain reaches 50 miles in depth in the north and south of the colony, averages 30 miles, and overlies sandstone strata.

The Mountains

Fouta Jalon. Fouta Jalon may be said to begin in the broken ridge of high plateaux which stretch southwards from Koumbia to 20 miles east of Forecaria. They are 140 miles from the sea in the north and only 45 miles in the south; but they also extend westwards to the peak of Mount Kakoulima (3,304 ft.), little more than 20 miles from Conakry. Intermediate between Fouta Jalon and the coastal plain are the outlying steps, generally from 500 to 1,000 feet above the sea, but with peaks reaching 1,500 feet. In the south, north-east of Forecaria, the first ascent from the plain is a remarkable and almost sheer scarp rising 2,000 feet. These steps conform to the general pattern of Fouta Jalon itself, for their outlines—the 500- and 1,000-foot contours for example—are extraordinarily complicated, whilst detached flat-topped hills stand out over lower areas. A thick flat crust of hard



22. *Granite tors*



23. *Mount Gangan*



24. *The estuary of the Loffa*



25. *Conakry: the Boulbiné lighthouse*

ferruginous laterite covers them, and the lack of humus, and of surface water except during rain, confines vegetation to tall grasses and stunted trees. Particularly infertile are the large plateaux which lie in the province of Gaoual and which extend into Portuguese Guinea. Those west and south of Koumbia are often known as *bowal*, a native word which appears on some maps.

Over and through these foothills the rivers run in deep and narrow valleys, generally bordered by scarps in which the underlying rocks are exposed. Only the larger streams are perennial, and all show, by rocky sill, by rapid, and by irregular gradient, their comparative youth. Quartz-schist, sandstone, dolerite, and occasionally gneiss appear.

Fouta Jalon is a dissected plateau (Fig. 12). The rivers to which it gives birth flow outwards in all directions, but drainage is mainly east and west. Nevertheless, numerous and ancient north-south lines are shown by ridge and valley, and, as a result, the whole is cut into 'chequer-board' blocks, bounded, especially to the west, by steep and often lofty scarps. The salient features are the long, low-bottomed valley which extends for over 100 miles, from the Kolenté (east of Kindia) in the south to the source of the Kakrima, a tributary of the Konkoure, in the north; and the horseshoe of lower western and higher eastern highlands which border it. Everywhere flat-bedded siliceous sandstones are overlaid by a hard blanket of laterite. The valleys are clothed in dense forest.

The central valley is not, curiously enough, a continuous line of drainage, though the Kakrima uses a long stretch of it. Its bottom is, on the average, about 800 feet, and in it, near Kindia where the Conakry-Kankan railway crosses, are the banana plantations.

The western arm of the horseshoe is broken by the Konkoure, which rises in the eastern and higher arm. The Tomine (Fig. 13), the Kogon, the Tiguilinta, the Fatalla, and many tributaries of all these rivers, however, rise in the western, which often reaches and surpasses the 3,000-foot level.

In the eastern arm are the plateaux which form the highest and largest part of Fouta Jalon and extend from the Senegal frontier to that of Sierra Leone. Mali, Labé, and Mamou lie upon their centre line, roughly along the meridian of $12^{\circ} 15' W$. On this line a long oval, 150 miles by 60, is over 3,000 feet high, whilst there are four areas of over 4,000 feet. These four centre respectively on Mali, Labé, Dalaba, and a point south-east of Mamou. None are continuous, for all are divided into separate blocks by their many intersecting

valleys. Their flattish surfaces of open rolling grass-woodland are well settled. In the northern three, carboniferous dolerite and gabbro form black scarps on these higher hills and cause waterfalls and rapids on the rivers. On complete decomposition these dolerites yield relatively fertile soils. The Gambia and the Komba, which latter is the head-stream of the Corubal, rise from either side of a narrow col to the north of the Labé block, but the Gambia, flowing northwards east of the Mali block, drains its eastern and northern slopes.

The Bafing, later to become the Senegal, and its many tributaries drain the east of the Labé and Dalaba blocks, whilst the Konkoure drains the western. The Tinkisso rises north-east of the Mamou block, the Kaba to its south.

Through Kindia, and north of the Mamou block, the skilfully engineered Conakry-Kankan railway finds its way, as do the rivers, between the blocks and along the valleys of the chequer-board.

Roughly along the parallel of $12^{\circ} 15' N.$, a broad spur runs east-north-east to finish in French Sudan as the Manding mountains. It ends on the north bank of the Niger near Bamako. Through it flow north the Bafing and the Bakoy, and from it numerous tributaries feed the Niger to the south and the Senegal to the north and west. The eastern arms and slopes of Fouta Jalon are gentler than those in the centre and west. There are scarps but not so high, valleys but not so deeply cut. The scenery is the same, however, for tablelands predominate and the chequer-board pattern remains. The horizontal sandstones of Fouta Jalon extend to the Manding mountains, but cease roughly along the line of the headwaters of the Bafing. East and south of this lies part of the old Archaean shield of West Africa, built of gneiss and schist with later intrusions of granite. Still, however, the tops and the plains are covered by laterite.

The Wasp-waist. The wasp-waist between Fouta Jalon and the Guinea Highlands, lying south-east of the Mamou block, has a special significance, since it is from here that the Niger starts its 2,600-mile course to its delta in the Oil Rivers. From the Mamou block itself rise the Great and Little Scarries. Between them bold spurs run southwards to Sierra Leone. North-eastwards from this point lie the last south-eastern plateaux and heights of Fouta Jalon, and from them many minor tributaries join the Niger. From Mamou the watershed between the rivers of the coast and those of the Niger plain runs roughly 60 miles east to Mount Tankon (3,300 ft.), and then turns south-south-east for 40 miles, to meet the Sierra Leone frontier south

of latitude 10° N. At this point is the real link between the two major mountain systems. It is only 1,600 feet in altitude and, but for political complication, would form the obvious physical gateway from south-west to north-east.

The Guinea Highlands. The Guinea Highlands differ in character from Fouta Jalon, conforming in structure to the south-eastern fringe



FIG. 13. *The Valley of the Tomine*

of the latter east of Mamou. In both cases the old plateau emerges and the flat sandstone cover disappears. Moreover, the hard laterite cap, general in the north-west, diminishes and is little in evidence south of latitude 9° N. Ranges trend north-east to south-west, and the many isolated dome-shaped hills, with bare rock surface devoid of soil and vegetation, rise 1,000 to 2,000 feet above the lightly forested hump-backed ridges, themselves 2,000 feet above the sea. The minor features are due to a thick superficial accumulation of sand and rock debris. The forest deepens over lower ground, and the gneisses, much in evidence there, yield rich soil for the oil palms and rice which are grown in the clearings.

If the trend of individual ranges is from north-east to south-west, the central axis of the Guinea Highlands is still from north-west to

south-east. For about a degree it follows the boundary of Sierra Leone, thrusting spurs into that colony. Here, as in Fouta Jalon, very bold sheer scarps are common in the west and gentler slopes in the east.

From the Loma mountains of Sierra Leone to the Dongorاما mountains, 115 miles to the east and lying half-way between Kissidougou and Kerouane, is a confused and slightly lower tangle of hills, from which rivers run north to the Niger and south to the drainage of Sierra Leone and Liberia. Kissidougou lies in the heart of this complex. From the Dongorاما mountains the main block, extending south-east to the Nimba and the Man mountains, is largely within French Guinea, but one important spur points south-west into Liberia. Generally, however, the boundary lies well to the south-west of this massif until the exceptionally fine mass of the Nimba mountains (Plate 21) is reached. Mount Nuon, its highest peak, and, indeed, the highest in French West Africa, is 6,083 feet high. The Cavally and the Mani rise from it, and it forms the meeting-ground of French Guinea, the Ivory Coast, and Liberia.

On the east of the main north-west to south-east chain a large spur runs north-eastwards almost to Odienné. The Milo rises north-east of Macenta in the fork made by this spur. Immediately east of the Milo the detached block of the Chaîne du Going rises to 4,330 feet. Eastwards again the Dion flows north to join the Sankarani along the western edge of a subsidiary spur, which itself runs towards Kankan. To the east of this final claw rises the Gwala, the headwater of the Sankarani. South-east of the spur and of the last extensions of the Guinea Highlands the rivers flow to the gulf of Guinea.

The Niger Plain

The Niger plain extends, fan-shaped, towards the wasp-waist between Fouta Jalon and the Guinea Highlands. The Niger, the Milo, and the Sankarani flow north-east across it. Its fringe, towards the hills, is everywhere broken by detached blocks and scarped plateaux. Scattered features reach Kouroussa and, forming a sill across the Niger, prevent navigation farther up. Here orthogneisses underlie a monotonous, laterite-covered plateau. Vegetation is sparse except along the rivers, and small granite tors rise from the plain. To the north of Kankan, as far as the Sankarani and the frontier, is a complex of crystalline schists, cut by occasional granite and by gold-bearing quartz veins, but the whole is lateritized and covered only by lightly wooded savanna.

3. THE COAST

THE coast of French Guinea shows many features of a land which is undergoing slow subsidence. Throughout most of its length it is low lying, indented by muddy estuaries and backwaters, studded with innumerable flat silty or sandy islands, and fringed by mangrove forest. Owing to the swamps and to the softness of their low banks these estuaries are often not even fordable above navigation limits. Villages lie away from river-banks and above flood-level. Navigation, except up the Nunez, is limited to cutters, sailing-vessels, and small steamers belonging to firms engaged in coastal trade. Hard rock reaches the sea only at Cape Verga and at Conakry. The tidal rise is three or four times that along the rest of the French West African coast, in many places exceeding 15 feet. Surf is heavy on those parts of the coast which are exposed to the Atlantic. Currents vary with the seasons, running strongest in August, when their rates range from 10 to 40 miles a day. In general they flow south and south-eastward from January to June, north and north-westward from June till August, and are variable for the last four months of the year. The triple force of the tides, the coastal currents, and the process of land-submergence prohibits the formation of sand barriers and of lagoons, which are both so well developed in the colonies farther to the east and to the north.

Landward of the mangrove swamps and marshes is a sandy coastal plain averaging 30 miles in breadth, but broken by the spurs which end in Cape Verga and Conakry. Sandstone strata underlie these flats, which are waterlogged after heavy rain. Eastwards, towards Fouta Jalon, foothills, generally facing west in well-marked scarps, form a very irregular line. The first step varies between 500 and 1,500 feet and is formed by a succession of flat isolated laterite-covered features.

Villages are more numerous on the plain and on the islands, wherever they are free of marsh, than on the foothills farther inland. On the swampy fringe communication is by water rather than by land. There are a few tracks but no roads. On the coastal plain settlements are connected to one main road, which is generally half-way between the marshes and the foothills. This road connects to the interior roads from Conakry. Other roads of the plain are poor owing to floods and lack of road metal.

Tristao Islands to River Nunez

There are numerous islands off the coast. Immediately south of the boundary with Portuguese Guinea lie the Tristao islands. Aube, the largest, is the most westerly and lies at a distance of 1 mile from the frontier. It is approximately 11 miles from east to west and 12 miles from north to south, and is dotted with villages connected by foot-paths.

Other islands of the Tristao group lie in the estuary of the river Compony north-east of Aube island. This estuary, the entrance to the Kogon (Kandiafara) river, is 4 miles wide at its mouth and penetrates deep inland, narrowing as it goes; but it is little used owing to difficulties of navigation and to a rocky barrier at a bend 20 miles from the sea. Once this barrier is passed, however, the river can be used by small craft for 50 miles from the sea. The village of Kandiafara is near the right bank, 25 miles above the barrier. The only means of communication in this area are by water or by tracks impassable after rain.

The 15 miles of coastline between the entrance to the Kogon and that to the Nunez are broken by numerous islands and shoals, separated by marigots or side channels. The Nunez is the most important navigable river in French Guinea, but its entrance is exposed. It is entered between Kembuto point (Pointe Kembuto or Bouffe) on Kasséguély island, south of Boffa creek and Dapiar point (Pointe Dapierre) on Kouffin island. There is no bar, but the sand is always shifting. Ships drawing $9\frac{1}{2}$ feet can reach Victoria (p. 142), 18 miles from the entrance, where the river is nearly a mile wide; those of smaller draught Bel Air and Boke, 11 miles and 25 miles farther. There are anchorages at or off Victoria, Bel Air, Rapasse, and Boke, and a seaplane base at Victoria. East of Victoria the country is less marshy and more populated, with factories along the river-banks and tracks between the villages.

A tributary, the Bourouma, joins the Nunez from the south between Bel Air and Boke.

Boke (p. 142) is the headquarters of the province of that name and is on the main road, described above, which runs southwards for 40 miles, at an average distance of 15 miles from the sea and of 5 miles from the edge of the coastal marsh. It has a gravel surface, is all-season, and crosses the Bourouma by ferry.

There is a landing-ground at Baralandé (Baralandi), about 3 miles north of Boke.

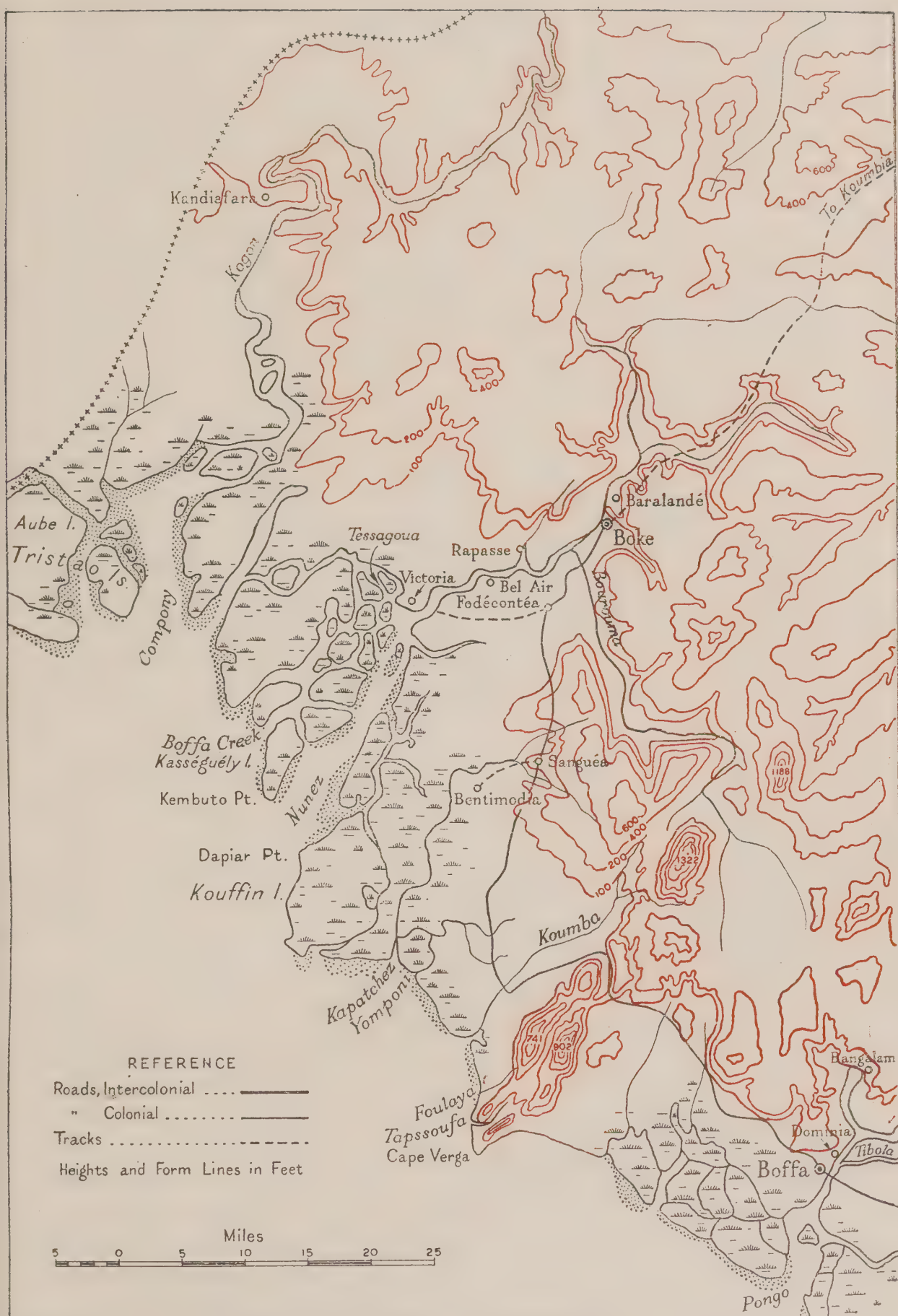
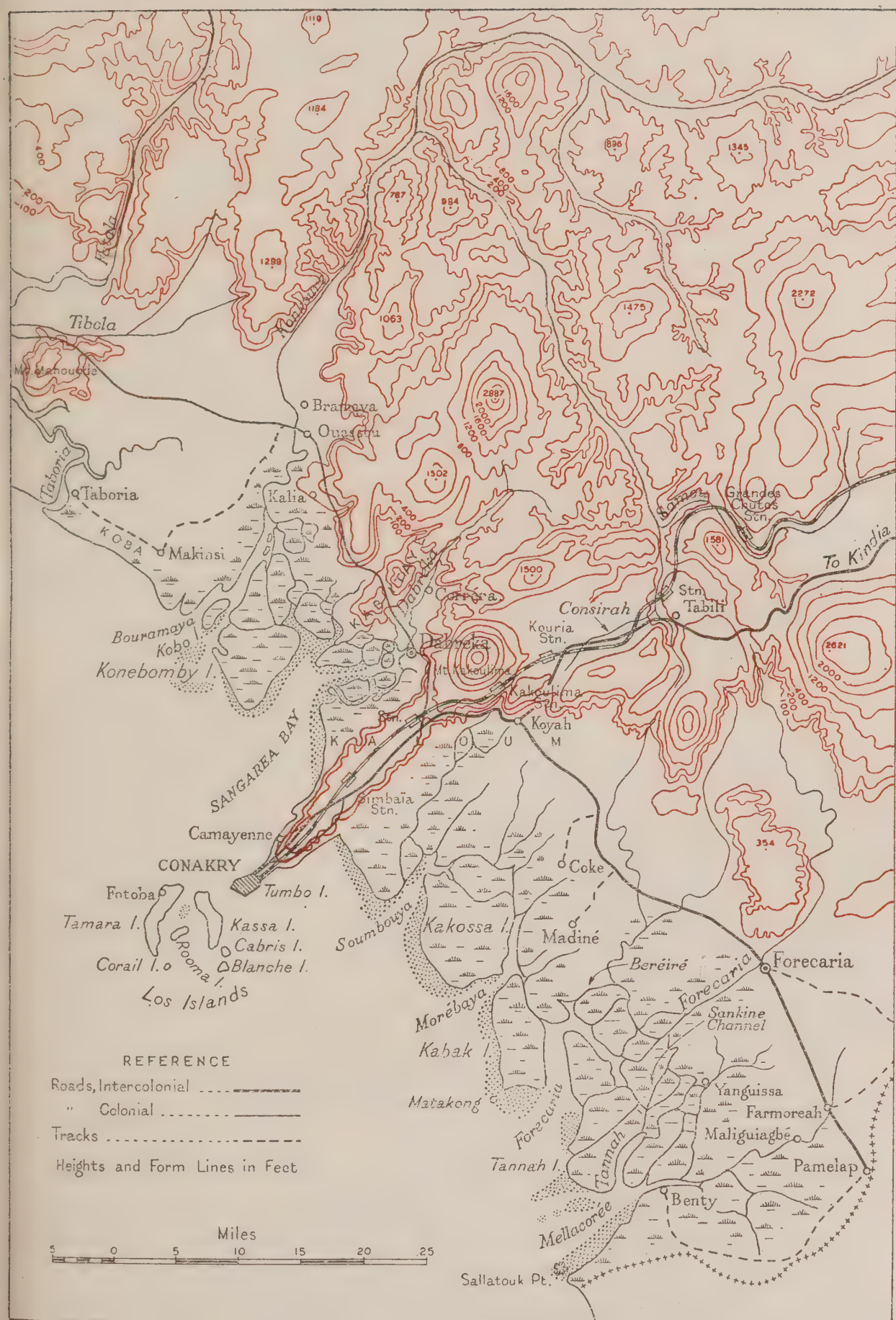


FIG. 14. *French Guinea: The Coast, Northern Half.*

River Nunez to Sangarea Bay

South of the Nunez, mangrove swamps line the coast as far as Cape Verga. Eight miles south of Dapiar point the coast turns due east for 7 miles to the mouth of the Kapatchez (Katako) river, which empties into a very shallow bay. The Kapatchez is not navigable, and inland there are only tracks connecting the few villages. Twenty miles south, past the mouths of the unimportant rivers Yomponi, Koumba (Kondeirè), Foulaya, and Tapssoufa, stands Cape Verga. This bold headland, rising to a height of 371 feet, falls away to a rocky, inaccessible, quartzite point and is a striking landmark. The main road crosses the ridge at a col 12 miles north-east of the cape, and 5 miles north-east of the road the river Koumba breaks through from east to west. For 12 miles from the cape the ridge, with peaks rising over 750 feet, is well settled, and tracks are numerous. The coast turns east and then south-east, and, 11 miles from the cape, is again fringed by swamp extending inland for 8 miles. The main road, 2 miles from the swamp, reaches Boffa 28 miles from the ridge. Rio Pongo, 30 miles from Cape Verga, is the name given to the estuary of the Fatalla river. Many minor streams also flow into it, however, and the 10-mile strip of uninhabited marsh which lies between Boffa and the sea is full of creeks. The direct entrance to the Pongo, known as the Sand Bar, is passable by small vessels only. The Mud Bar leads up a creek, 8 miles north-west of the Sand Bar, and there are four other possible creek channels, two north-west of the Mud Bar and two south-east of the Sand Bar. Boffa (p. 143) the headquarters of the province, stands just below where the river joins the estuary, about 10 miles from the sea. It has a population of over 1,000 and is a trading station. As it lies beyond the coastal mangrove belt, communications with the numerous surrounding villages are fairly good. There is a well-sheltered seaplane anchorage south-south-west of the town. A tributary, the Tibola, joins the Pongo at Boffa, flowing in from the east. Five miles south-east of Boffa, and on the east of the delta, is Mount Mahounde (571 feet). Twelve miles south-east of the Pongo, a village called Taboria stands on a creek of the same name. A seasonal road leads from there and runs parallel to and about 2 miles from the coast for 9 miles to Makinsi village, where it turns north-east to meet the main colonial road and to cross the Konkoure river. South-eastwards, along the coast from Taboria, is a 12-mile stretch of palm-covered sand-dunes with no mangrove swamps between it and the



sea. Villages are many in this area until the estuary of the Konkoure is reached.

Sangarea Bay

Sangarea bay stretches for 20 miles south-eastwards to the Conakry ridge. It includes the estuaries of the Konkoure, known at its mouth as the Bouramaya, and of the Dabreka. Their shores are uninhabited mangrove swamps which extend 18 miles up the Konkoure and 5 miles up the Dabreka. The Konkoure or 'bad river' is the longest to reach the French Guinea coast, but is of no use to navigation, except for small vessels as far as Bramaya, 23 miles upstream from Kobo island. This island divides the two main arms of the river near the sea. Muddy side-creeks abound. The southern of the two rivers, the Dabreka, is navigable at high water as far as the town of the same name, which is a post and telegraph station.

In the south-east of Sangarea bay and immediately north-east of Conakry is a large seaplane anchorage. This has a run of 2,000 yards in any direction and is sheltered from all but west winds.

The main road turns south-south-east after crossing the Konkoure at Ouassou, reaches Dabreka after $15\frac{1}{2}$ miles, and continues $8\frac{1}{2}$ miles south to Dabreka station on the Conakry-Kankan railway. Throughout these 24 miles the coastal plain narrows to a strip between Fouta Jalon and the marsh. Isolated, flat-topped foothills, averaging slightly over 1,000 feet, fringe the rugged higher country inland. The main ridge, pointing south-west, culminates in Mount Kakoulima but continues in a curious long pencil of rock ending near Conakry. This pencil is never wider than 5 miles, rises to 350 feet in places, and is bordered on the north-west and the south-east by vast stretches of mangrove swamp.

Los Islands and Conakry

To the south-west are the Los islands, consisting of three larger islands, Tamara, Rooma, and Kassa, and three smaller ones, Corail (Coral), Blanche, and Cabris. They form an effective screen for the port of Conakry, the capital of the colony. They are fertile, but fringing cliffs make landing difficult, except on the east coasts of Tamara and Kassa, which have several beaches. There are also three small piers, one on the north-east of Tamara and two on the north of Kassa. Valuable bauxite deposits exist in these islands. Six cables north-north-west of Rooma there is good anchorage in 5 fathoms. Near the southern tip of Tamara stands a lighthouse. Vessels drawing

23 feet can enter the channel between Kassa and Tumbo, on which Conakry lies, and so reach the port. Those remaining outside can anchor half a mile south-west of Tumbo, although this anchorage is dangerous during the wet season. Tumbo is flat and wooded, but fringed with granite and ultrabasic rock and difficult of access. It is some 2 miles long and up to 1 mile wide, and it is connected to the mainland by an embankment pierced by culverts. There are a few beaches and, on the south side, Dragonnier cove, where small craft can anchor. The port (p. 143) is on the north of the island.

Conakry to Sierra Leone

South-east of Conakry mangrove swamps, sometimes 20 miles deep, fringe the coast as far as the Sierra Leone border. The Soumbouya, Morébaya, Forecaria, and Mellacorée are muddy estuaries into which flow many streams from Fouta Jalon. The two former are of little value for navigation, but on both sides of the mouth of the Morébaya lie well-inhabited islands: Kakossa to the north-west and Kabak to the south-east. The main road sends two fair connexions southwards to the edge of the swamps which lie inland of these islands for 5 or 6 miles, and on them are many native tracks. One and a half miles south-west of Kabak is the small island of Matakong, which, compared with the low coast, is a prominent landmark. It has a lighthouse, a custom-house, and a post office and is the trading centre for the district, although, owing to reefs and mud banks, only small vessels can approach it. The mouth of the river Forecaria forms a large opening in the coast 5 miles east of Matakong. Owing to shoals and to a rocky barrier 2 miles from the sea it is unsuitable for navigation from the entrance. The river above can be reached, however, by the river Mellacorée and its main tributary, the Tannah. The mouth of the Mellacorée lies between the south of Tannah island and Sallatouk point. The Tannah flows into it from the north about 7 miles from the sea and can be ascended for 16 miles to Yanguissa. Sankine channel, 6 miles below Yanguissa, leads from the Tannah into the Forecaria river and can be used by vessels drawing not more than 7 feet. These can ascend to Forecaria, the headquarters of the province and a centre of the ground-nut trade. The Mellacorée is navigable for vessels of 15-foot draught as far as Benty (p. 146), a trading settlement 10 miles above its entrance. Smaller vessels ascend to Maliguiagbé, 12 miles farther. There are trading stations along both banks.

The intercolonial road from Koyah passes through Forecaria (48

miles), Farmoreah (59 miles), and Pamelap ($67\frac{1}{2}$ miles) to the Sierra Leone frontier, where it connects with Freetown via Kambia and Port Loko. The road runs through flat country and has numerous offshoots to neighbouring banana plantations. There is a ferry at Forecaria. From this place a rough and hilly track goes to Kindia by way of Moussaya, crossing numerous streams on the way. From Moussaya an even poorer track runs south-east to Farmoreah, but it is rarely fit for motor traffic. Another track connects Pamelap and Benty.

For the last 40 miles, north of the Sierra Leone frontier, the coastal plain broadens out, and the foothills, here ending in particularly bold scarps, lead east and north-east, edging the valley of the Great Scarcies.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	Latitude N.	Longitude W.	Altitude in feet
Youkounkoun	12° 32'	13° 07'	253
Mali	12° 08'	12° 18'	4,803
Siguiri	11° 27'	9° 08'	1,286
Labé	11° 15'	12° 12'	3,451
Boke	10° 56'	14° 15'	161
Kouroussa	10° 39'	9° 53'	1,247
Mamou	10° 22'	12° 05'	2,440
Conakry	9° 31'	13° 43'	16
Beyla	8° 41'	8° 39'	2,218
Guékédou	8° 33'	10° 09'	1,542
Macenta	8° 32'	9° 28'	2,034

THE year is everywhere divided into a wet season with south-west winds and a dry season with north-east winds. The former, humid, cloudy, and equable, is longer in the south, while the latter, with a greater range of temperature, lower humidity, and fewer clouds, lengthens to the north and inland. On the coastal plains the climate is particularly monotonous and unhealthy.

Pressure (Fig. 58)

The equatorial low-pressure system passes over the colony northwards in the first half of the year and southwards in the second half. The monthly means of most stations, therefore, show two minima, although the second of these is very slight. At coastal stations the lowest figures occur in the first months of the year, but they differ by only 3 or 4 mb. from the maxima in July. Changes are more pronounced in the interior, where the annual range is some 4 or 5 mb.

TABLE I. *Mean Daily Pressure (1000 + millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Kouroussa . . .	11	10	08	09	09	12	13	12	12	11	11	12	11	5
Mamou . . .	11	10	09	10	11	13	14	13	13	13	13	13	12	5
Conakry . . .	11	11	10	11	11	13	15	13	13	12	11	11	12	5
Beyla . . .	11	10	10	10	11	14	13	14	13	13	12	12	12	4

Daily variations are also greatest in the interior, and the range is everywhere greater during the dry season. Thus at Conakry there is a diurnal range of 3 mb. in the dry season, and of 2 mb. or less in the wet, between maxima at 10.00 a.m. and 10.00 p.m. and minima at 4.00 a.m. and 4.00 p.m. At Kouroussa and Mamou the corresponding figures are 6 or 7 mb. and 3 or 4 mb.

Irregular variations are rare, but tornadoes lower the pressure as they break.

Winds (Fig. 50)

Surface Winds. Naturally land forms influence surface winds, and there are many variations in the mountains. Away from the highlands there is in general a regular alternation of the harmattan and the monsoon, the duration of the former being greater in the north and north-east (Fig. 16). At Conakry, which is typical of conditions on the coast, the monsoon, aided by sea-breezes, prevails all the year, although interrupted for short periods between November and March by the harmattan. At Kouroussa the harmattan persists from November to March and the monsoon takes its place from April to October.

These two surface currents are light, and nights are almost always calm. Though the border between the two is a region of turbulence, and strong winds are occasionally set up, winds over 15 m.p.h. are less than 1 per cent. of the annual readings. Along the coast the mean speed is less than 3 m.p.h. in the morning, and increases to about 6 m.p.h. in the evening, when the sea-breeze is at its strongest. There is a general freshening as the monsoon advances. In the highlands, mornings and evenings are usually calm: winds rise to a maximum at midday, but even so their mean speed is only 4 m.p.h. Both the highlands and the Niger plains have the same seasonal rhythm as the coast, but the records of Kouroussa suggest that wind speeds on the plains are greater and daily variations more pronounced. Winds at midday are twice as strong as in the morning,

except in October, when, as the monsoon disappears, there is a definite slackening.

The upper level of the harmattan is rather indefinite, since there are similar winds above it, but it lies at approximately 4,000 feet.

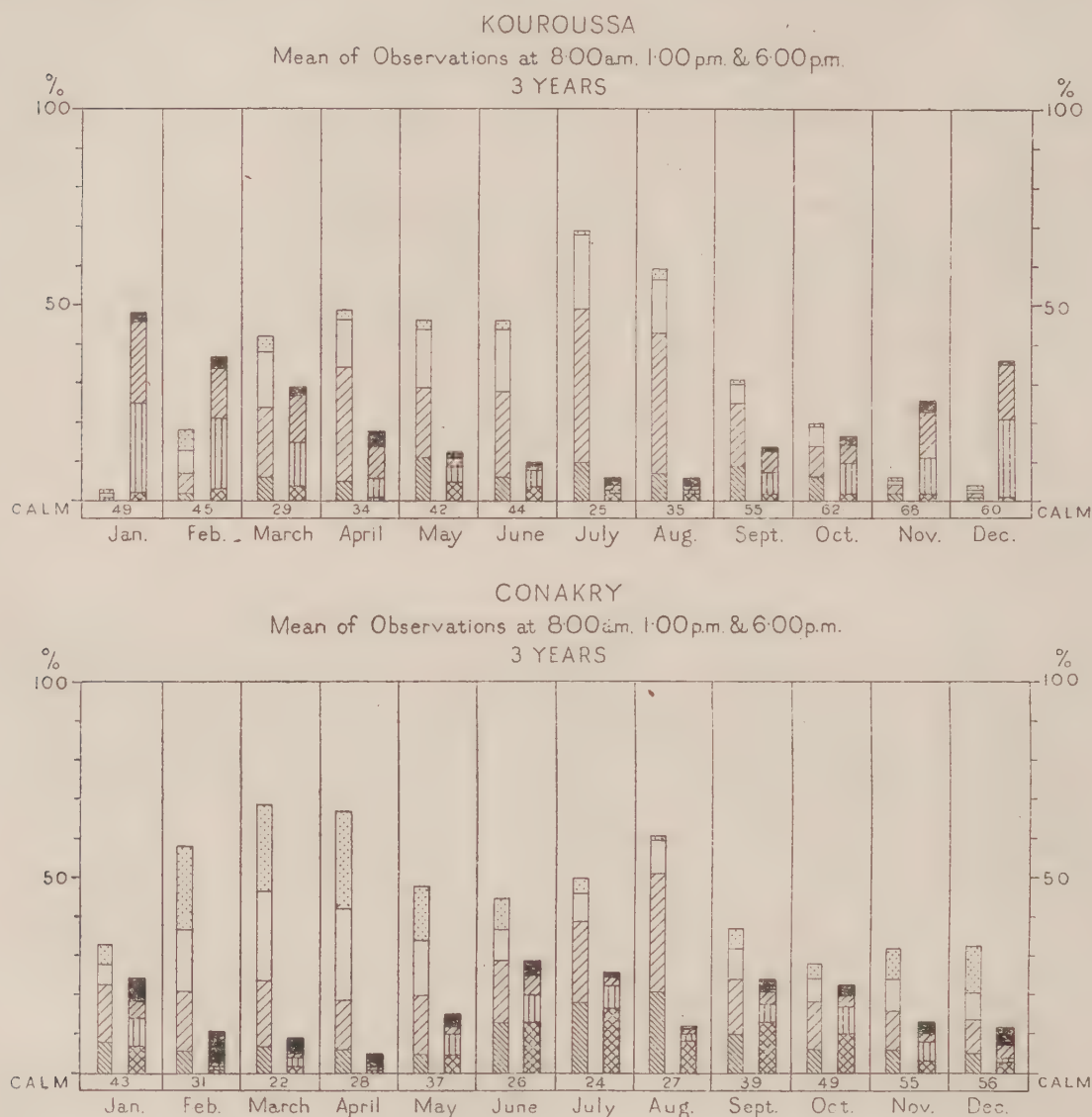


FIG. 16. *French Guinea: Surface Winds.* (For Key see Fig. 6)

The monsoon varies in depth from 3,000 to 6,000 feet. It deepens as it advances, is at its deepest in August, and then grows shallower as it retreats.

For some 20 miles inland from the coast, sea- and land-breezes introduce modifications by day and night. They too are shallow and light, and their effects are less in evidence when the monsoon is well established between June and October. The sea-breeze brings a welcome increase in humidity when the harmattan has reached the coast.

Tornadoes occur in the belt between the harmattan and the mon-

soon. There are, therefore, two tornado seasons. The first is from April to June, starting earlier in the south, and the second from mid-September to October, starting later in the south. The heaviest rain is experienced with the storms of the former season, although those of the latter are the more violent. Since tornadoes blow up from the east, lightning in that direction may be taken as a sign that a storm is approaching, and gives from a half-hour to an hour's warning. Inland, the excessive formation of convection cloud is often a sign of an impending storm, but on the coast, where tornadoes frequently occur at night, the sea-breeze often prevents such cloud accumulation.

Upper Winds. Easterly winds, wedge-shaped in vertical section and thinner to the north, lie above the surface winds. A westerly current extends to very great heights above the easterlies.

From November to April the base of the easterlies lies above the harmattan at an average height of 3,000 to 6,000 feet, but, since they also are dry and hazy, the dividing line between the two is not easily distinguished. Their mean upper level is at 15,000 to 20,000 feet, but daily and even hourly variations are very considerable. From April to October the easterlies lie above the monsoon; their upper level is then between 20,000 and 25,000 feet over the north of the colony, and from 25,000 to 40,000 feet or more over the south. The speed of these easterly winds is rarely in excess of 15 m.p.h., but winds of considerable force may occasionally be met in the higher layers.

The westerlies which lie over this easterly current are also light: as a general rule their speed does not exceed 15 m.p.h. Cirrus often marks their base.

Rainfall, Cloud, and Thunder

Rainfall (Fig. 59). The wet season is from April or May to October or November, with an earlier start in the south. The heaviest falls are experienced on the coastal plains and the western slopes of the highlands, the lowest in the north-east.

The dry season (November to April) is practically rainless even on the coast. The rains start in the south in March, have spread to the latitude of Conakry by April or May, and reach the boundary of Senegal by June. November sees the last of the rains in the north, and they have retreated beyond the southern limits of the colony by December. July and August are everywhere the wettest months, and from then until October rivers are full, landing-grounds and roads sodden, and floods widespread.

TABLE II. Mean Rainfall

R = Rainfall in inches. X = Maximum fall in 24 hours. D = Number of rain-days.

Station	Yrs. obs.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COASTAL PLAIN Youkoun- koun	10	R 0	0	0.16	0.02	2.18	7.91	11.07	15.57	11.34	6.38	1.22	0	55.85
		X 0	0	1.18	0.14	3.82	4.41	3.77	4.76	4.96	3.07	1.97	0	4.96
		D 0	0	0.3	0.1	3.6	12.2	15.0	17.9	15.3	10.3	2.3	0	77.0
Boke	10	R 0.03	0	0.01	0.60	4.52	12.77	20.52	33.80	19.35	15.70	3.90	0.16	111.36
		X 0.18	0	0.08	1.87	3.87	6.72	6.13	7.09	9.92	3.04	2.27	1.52	9.92
		D 0.2	0	0.3	1.6	9.0	19.3	24.1	26.9	24.9	21.6	7.0	0.2	135.1
Conakry	10	R 0.06	0.14	0.37	0.87	6.20	22.02	51.07	41.52	26.93	14.65	4.80	0.37	169.00
		X 0.55	0.55	2.24	1.59	3.15	6.40	8.80	14.15	11.80	4.56	3.81	1.33	14.15
		D 0.2	0.5	0.8	2.9	12.3	24.3	29.6	29.3	26.3	21.9	9.6	1.0	158.7
HIGHLANDS Mali	4-5	R 0.05	..	0.30	0.77	4.82	9.33	15.26	18.69	12.88	7.50	0.91	0.07	70.58
		X 0.28	0.04	1.08	1.77	2.84	3.76	5.28	4.59	4.21	3.19	1.97	0.55	5.28
		D 0.2	0.1	0.6	1.9	5.8	14.4	19.9	23.0	19.6	12.6	1.8	0.3	100.2
Mamou	10	R 0.28	0.38	1.84	5.00	8.01	10.11	13.21	15.81	13.43	8.03	2.42	0.34	78.86
		X 1.38	1.34	1.67	3.74	6.70	2.76	3.71	4.29	4.92	2.28	2.11	1.54	6.70
		D 0.4	0.7	3.4	8.9	13.2	19.4	22.8	24.8	22.9	18.3	6.9	1.1	142.8
Beyla	10	R 0.33	1.59	5.17	5.87	6.94	8.56	9.57	10.43	11.45	5.55	3.47	0.90	69.83
		X 0.98	2.99	2.01	2.64	3.39	2.56	3.86	3.80	2.99	2.17	2.51	1.61	3.86
		D 0.8	3.2	10.2	10.5	14.2	15.3	16.1	19.0	20.0	14.3	7.4	2.2	133.2
Guékédou	10	R 0.38	1.68	4.98	7.32	10.69	10.20	11.26	14.63	14.51	11.08	6.28	1.28	94.29
		X 1.71	2.11	3.82	2.80	4.04	2.98	4.04	5.80	4.35	2.62	4.31	1.71	5.80
		D 0.8	3.1	10.2	11.5	16.0	18.0	19.0	21.5	22.3	22.4	13.6	3.0	161.4
INTERIOR PLAINS Siguiri	10	R 0.06	0.06	0.09	1.26	2.74	6.83	10.20	13.66	10.33	3.56	1.02	0.21	50.02
		X 0.41	0.25	0.39	1.41	1.84	3.58	7.08	5.69	4.70	1.87	3.12	2.06	7.08
		D 0.2	0.4	0.6	3.4	6.0	10.1	12.7	15.6	15.0	8.6	1.7	0.1	74.5
Kouroussa	9-10	R 0.36	0.28	0.94	2.76	5.26	9.70	11.65	13.61	13.40	6.61	1.33	0.37	66.27
		X 1.61	1.62	1.29	2.22	3.67	4.60	4.69	3.09	5.37	4.13	1.51	3.06	5.37
		D 0.4	0.6	2.1	5.6	9.4	15.2	17.9	19.3	19.7	14.4	3.4	0.2	108.2

On the coast an annual fall of 80–100 inches is normal. Though at Conakry 276 inches have been recorded in an exceptional year, the annual total is more regular than it is in the interior. As much rain falls in July or August as over south-east England in a whole year, and almost every day has rain. The average daily fall in these wettest months is about 1·5 inches, but 14 inches have been recorded. There is much rain at nights, and in July and August there are at times several days of continuous rain. In other months, however, the wet days are separated by two or three fine ones.

In the highlands rainfall is less regular. The average is from 60 to 90 inches per annum, but totals are almost certainly higher at exposed localities on the south and west. The number of rain-days is less than on the coastal lowlands. Violent storms are the rule, but on the highest ground steady rain is frequent.

The interior plains, in the rain shadow of the highlands, have a smaller rainfall, and the totals for any year are very irregular. Most rain falls during the afternoon, in heavy storms, but several fine days normally separate two wet ones, even in August. Rain at night is rare, but is more persistent. The average fall each rain-day in the wettest months is about $\frac{3}{4}$ inch.

Cloud. During the dry season clouds are few. Over the coast 3–4 tenths is then the average amount of sky covered, and 2–3 tenths on the highlands and over the interior plains. During the wet season 8 or 9 tenths of sky are normally covered over the coast, and 5–8 tenths over the highlands and the interior. Cloud is particularly prevalent on the windward slopes of the mountains, and base level is often very low.

Morning readings are in general higher than those of the afternoon. Light cumulus is the commonest type of cloud in the dry season, although the harmattan frequently has none. The cumulus clouds of the monsoon, with their base from 1,500 feet to 2,000 feet high, are heavier and closer, and massive cumulo-nimbus is the main source of rain. Both are often embedded in strato-cumulus.

Thunder. The disturbed conditions that cause thunder are absent during the dry season. Thunderstorms are frequent at any time during the rains; but, since most of the storms occur along the northern edge of the monsoon, a double maximum is discernible at almost all stations. There are, therefore, numerous storms from April to June as the monsoon advances, a slight easing when it is established in July and August, and then a second maximum between September and November as it retreats. At the beginning of the former maximum

and at the end of the latter, thunderstorms are often dry, but at all other times they give heavy, if local, rain. At night on the coast they are often associated with tornadoes, but only rarely by day.

Temperature and Humidity

Temperature. In all parts of the colony average temperatures lie between 100° and 60° . The coastal plains have the smallest annual range, and April is the hottest month, with daily maxima varying

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
COASTAL PLAIN														
Boke	95 62	98 64	101 68	101 71	97 73	91 72	88 71	84 72	88 72	90 70	91 69	92 64	93 69	17 11
Conakry	88 73	89 74	90 75	90 76	89 76	87 75	83 73	82 73	84 74	86 74	87 75	88 75	87 74	8 3
HIGHLANDS														
Mali	79 61	82 64	84 63	86 66	84 63	79 61	73 60	71 61	73 61	76 62	77 63	77 61	78 62	15 6
Mamou	91 54	93 59	94 64	93 66	88 67	84 65	80 65	79 65	82 65	83 64	86 62	88 56	87 63	15 13
Beyla	88 59	89 65	89 67	86 67	84 66	82 66	79 64	80 65	83 66	84 66	85 65	88 59	85 65	10 8
Guékédou	87 61	90 66	90 69	89 71	88 70	86 69	82 70	81 68	83 69	86 68	85 68	85 63	86 68	9 10
INTERIOR PLAINS														
Kouroussa	92 57	97 63	99 71	99 73	94 73	89 71	86 70	85 70	87 70	90 69	91 66	91 58	92 67	14 16

from 90° to 100° and daily minima from 60° to 70° . In August nights are warmer than in April, but rain lowers the day temperatures to their minimum at about 83° . The decreased range and high humidity make the wet season very trying, but the sea-breeze brings relief in cooling the air by as much as half a dozen degrees. Here, as elsewhere, tornadoes and rain cause sudden falls.

In the highlands and interior there are much the same seasonal changes, but there are greater variations. The hottest months are March and April. Maxima are lowest in August, but nights are coolest in December and January. The mean diurnal range is about 30° in the dry season and 15° in the wet. Conditions in the enclosed forested valleys of the highlands are almost insupportable in the wet season, but differences due to topography are great, while changes are rapid and unpredictable. Sun temperatures are from 10° to 20° higher than those shown in the above table. The abrupt falls caused by storms are more marked than on the coast.

Humidity. On the coastal plains both vapour pressure and relative humidity are normally high even in the dry season, and heavy dews are common. Slightly lower means from December to March are due not so much to any general lowering as to exceptionally low figures registered during the brief appearances of the harmattan. In contrast to a daily range of about 30 per cent. in January, the relative humidity is very high all day in July and August, and the range is then only about 10 per cent.

TABLE IV. *Mean Relative Humidity (percentages)*

Two observations: 8.00 a.m. and 6.00 p.m.

Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
COASTAL PLAIN														
Boke . . .	90	95	91	90	91	95	96	97	96	96	96	92	94	7
	46	41	42	50	61	75	86	88	85	81	70	57	65	47
Conakry . . .	89	90	85	83	85	89	93	94	94	92	91	88	89	11
	65	65	63	64	70	77	84	87	82	77	74	67	73	24
	68	69	69	70	72	78	84	86	84	79	78	72	76	18
HIGHLANDS														
Mamou . . .	66	76	79	85	89	92	94	95	94	95	93	81	87	29
	29	33	38	54	73	78	84	87	86	80	67	44	63	58
Beyla . . .	72	83	90	89	88	92	91	92	91	89	89	80	87	20
	37	47	64	73	80	79	85	86	86	81	80	57	71	49
Guékédou . . .	93	91	92	93	93	93	94	92	93	92	95	92	93	4
	53	55	65	76	80	79	81	83	87	86	83	65	74	34
INTERIOR PLAINS														
Kouroussa . . .	76	70	72	78	85	91	94	95	95	94	94	88	86	25
	19	24	34	42	55	67	71	73	71	64	46	31	50	54
	23	24	27	39	53	65	72	77	73	73	37	40	52	54

In the highlands and interior both the annual and the diurnal ranges are larger. Relative humidity is normally greater in the Guinea Highlands than in Fouta Jalon, but individual stations show considerable variations from the mean. During the rains figures are rarely below 70 per cent. at any time of day, and are usually over 90 per cent. in the mornings. In the dry season a relative humidity of 60 to 80 per cent. is normal for the mornings, and one of 20 to 30 per cent. for the afternoons. In the Niger plains figures below 10 per cent. are common when the harmattan is blowing strongly.

Visibility

Broadly speaking, conditions are best just before and after the rains, for in the dry season there is much haze from the harmattan. At all times of year the afternoons and evenings are clearer.

Between November and April visibility is better on the coast than over the highlands and interior plains, which are more affected by the

harmattan, but fog is apt to occur at nights on the damp flats near the coast. Visibility is generally from $\frac{1}{2}$ to $2\frac{1}{2}$ miles in the morning and from $2\frac{1}{2}$ to $12\frac{1}{2}$ miles at midday and in the evening. From January to April it is greatly reduced by bush fires.

Between April and October visibility at the surface improves, though it is still bad in the early morning. On the coast it is generally between $1\frac{1}{4}$ and $6\frac{1}{4}$ miles in the morning and from $2\frac{1}{2}$ to $12\frac{1}{2}$ miles at midday and in the evening, but heavy rain in July and August accounts for occasional readings of under 1 mile. Inland, visibility is rarely less than $6\frac{1}{4}$ miles in the morning and is more than $12\frac{1}{2}$ miles in almost every case at midday and in the evening. The chief trouble comes from the intense rain and low cloud: the latter blankets the highlands for days on end at the height of the season.

Over French Guinea, as over other parts of West Africa, the easterlies may cause a belt of relatively poor visibility above the clear layers of the monsoon, though this upper belt will usually be found to be cloudless.

Swell and Surf

Swell (Appendix II) is usually light along this coast except in the wet season, and it is most commonly from the south-east quadrant. There is, however, a marked increase in readings from the north-west between December and April, and in those from the south-west when the monsoon is well established.

Surf is everywhere and almost always heavy, although the many estuaries give shelter from it.

Meteorological Services

The two most important stations are at Conakry and Kouroussa, both of which have been active for some time and are fully equipped with up-to-date instruments. The weather reports of these two stations, together with those of Boke, Labé, and Macenta, help to make up the synoptic reports from Dakar. Other secondary stations are at Beyla, Guékédou, Mali, and Mamou. Records of rainfall are kept at fifteen other places.

5. VEGETATION

By far the greater part of French Guinea belongs, in the broad sense, to the Guinea subzone of the grass-woodland zone. To the north there are some small isolated areas which represent southern extensions of the Sudan subzone and to the south, against the Liberian and

Ivory Coast borders, are regions of dense forest. The most interesting feature, however, is to be found on the high plateaux and peaks of the montane area of Fouta Jalon, extending with breaks to the north-west Ivory Coast. Either the greater precipitation at the higher altitudes or the relative inaccessibility of much of this district has resulted in what appears to be a northward extension of dense forest. It is very probable that considerable parts of the Guinea subzone were formerly covered by this forest, replaced now by grass-woodland through the destructive activities of man. Indeed the Fouta Jalon forests are probably remnants, rather than northward extensions, and owe their preservation both to less intense and continuous exploitation and also to climatic conditions favourable to rapid and successful regeneration. A narrow belt, inland from the coast, and at most 50 miles wide, has vegetation of the Casamancian type, in so far as this is worth distinguishing from the Guinea subzone.

The river mouths, up to the limit of tidal influences, are clothed with dense mangrove-woodland, such as is described in Volume I, pp. 83-5. Elsewhere the coastal belt has a dense forest vegetation essentially of the rain-forest type. Inland the rising ground is almost wholly grass-woodland except in the valleys and moister areas where dense forest still persists in so far as man's depredations allow. Where the Sudan subzone extends, very locally in the extreme north and in the east near Siguiri, the shea-butter tree is common and in the Guinea subzone proper the Meni oil tree. Both have oily fruits, which, however, are quite distinct in structure, although the trees resemble one another in habit and general appearance.

The whole of the centre of the colony is rich in differences of topography and climate. The substratum, too, is very diverse. There is much ferruginous laterite, and plateaux of sandstone and granite are common. Vegetation is correspondingly mixed. The margins of streams and rivers have fringing forests and the valleys usually have areas of magnificent dense forests with trees attaining 100 to 120 feet or more in height. The forests are rather more varied and mixed than is the southern rain-forest proper, since evergreen and deciduous trees tend to alternate more or less in patches, sometimes extensive, according to the local conditions. In some of the well-developed forests three strata of trees can be distinguished, having mean heights of about 120 feet, 60 feet, and 35 feet respectively. Their canopies as a whole are continuous and overhead cover is dense. Woody climbers are abundant. In marshy places palms, especially wine palms (*Raphia*), dragon-trees (*Dracaena*), and bamboos are common. On the higher

arid and rocky plateaux the woody vegetation is meagre or absent. Where trees and shrubs occur they are usually not more than 45 feet in height and are often stunted. Many of the terraces and laterite tablelands have only a scattered vegetation of plants able to withstand dry and warm conditions (xerothermic). Conditions in some parts are remarkable: for several months plants may be growing in water accumulated on the almost impervious substratum, while for the rest of the year the 'soil' is dry and hard. A whole series of remarkable plants (many of them found nowhere else in the world) have been recorded from the higher isolated plateaux and peaks of Fouta Jalon. Some may well represent very ancient types. On other flat sandstone areas a dry grassland occurs as a unique community dominated by tufts of *Catagyna pilosa*, a member of the sedge family.

6. THE PEOPLE

FULANI

THOSE who know British West Africa and who associate the Fulani with Northern Nigeria may be surprised to learn that, as far west as French Guinea, they outnumber any other single people. In the Federation as a whole the Fulani (Plate 27) are the second most numerous people, yet it is in French Guinea that their largest numbers are to be found.

Their origin is obscure, and anthropologists disagree. One thing is certain. Their ways and appearance are those of Hamitic nomads, and, although they have developed into Moslem overlords and missionaries, mixing blood freely with subjected peoples, they retain an individuality all their own.

It seems reasonably certain that, in the first century of the Christian era, they migrated from Cyrenaica to Timbuktu and Macina. The ninth century saw their removal to Fouta Jalon, where they adopted the language of the tribes they conquered. Towards the end of the eleventh century they began that eastward movement which has strung them across the Sudan from the Senegal almost to the Nile. This movement may not have entirely ceased, for as recently as 1907 many Fulani went from the middle Niger to the Nile valley.

Fulani villages are usually intermingled with those of other tribes, but there are great concentrations in Fouta Jalon and on both banks of the upper and middle Senegal.

Organization and Mode of Life. In Nigeria there is a fairly elaborate political system of emirates tributary to the Emir of Sokoto. In



26. Conakry: the harbour



27. *Fulani*

French West Africa there is no such system, and the Fulani tribes are more widely scattered. In each tribe there are commonly three castes: nobles, free herdsmen, such as are known in Nigeria as the 'cow Fulani', and artisans. The second class is very much larger than the other two combined, and the third includes blacksmiths and weavers. Although there are some settled farms, the predominant occupation is the pasturing of cattle. Men play a larger part in this than among most other African tribes, and the tending of cattle is not thought to be unmanly. Milking is done by men or by childless women and churning by women. This operation is performed in a large calabash with a circular lip into which a small calabash is fitted as a lid. When the butter has been separated from the buttermilk it is often used for anointing the persons of its makers. A firm cheese is made in some parts.

Fulani herdsmen become very much attached to their animals, and the men would rather starve than kill them for meat. Many anecdotes demonstrate the strength of the bond between man and beast. One such relates an incident that illustrates both the independence and the ingenuity of the Fulani. It occurred farther east than French West Africa in the days when the Shari river formed the boundary between French and German territories. A Fulani tribe wished to cross the border into French lands, but the Germans objected; and, although the men themselves crossed the river, their cattle were confiscated. At midnight the beasts, not at all happy at being separated from their masters, heard a familiar call. With one accord they stampeded through the German sentries and swam across the Shari.

7. HISTORY

Privileged Companies

IN 1697 André Brue entered on his long period of office as Director-General of the Compagnie du Sénégal. Most of the company's activities were in Senegal, but its sphere included the Rivières du Sud,¹ and it had outposts in Cacheo and Bissau. The latter post was enlarged by Brue in 1698, and in 1701 he visited it in person. Despite Portuguese opposition, he negotiated a cession of a small area from

¹ During the seventeenth and eighteenth centuries the term 'Rivières du Sud' was rather vaguely used to denote the coastlands between Cape Roxo and Cape Palmas. From 1845 to 1893, however, it was officially defined as the French coastal territories south of Senegal and along the shore of the gulf of Guinea as far as Gabon. In 1893 it was restricted to the coastlands of the modern French Guinea. In this last sense it is still used occasionally and unofficially.

the natives, and built a fortified and permanent post there. In the following year he visited the Bissagos islands and acquired property at Bolama.

By the end of the seventeenth century the company was annually exporting some 35 tons of ivory and 50 tons of wax from Bissau, 30 tons of ivory from the Nunez, and lesser quantities of both from the Geba. In addition, there were small consignments of gum, hides, feathers, cotton, and gold.

Notwithstanding the activities of Brue, European nations took little direct interest in the Rivières du Sud until the middle of the eighteenth century. This was in sharp distinction from Senegal, where there was the fiercest rivalry both in commerce and in arms. The difference was largely due to the contrasting coastlines. That of Senegal was easy of access, while that of the Rivières du Sud was deeply indented and difficult of navigation. Naturally the latter territory was not exploited while the easier country to the north was still undeveloped.

The Compagnie du Sénégal did not exercise its full rights between Bissau and Sierra Leone, and abandoned its post at Bissau in 1736. About this time there were a few French private traders along the Rivières du Sud. In the Sierra Leone estuary the English were established on Bunce island, but the French took this fort in 1704, capturing 7,000 elephant tusks. Numerous half-castes, also from Bissau, had prosperous factories along the coast. One of them married a daughter of the King of Bramaya (Fig. 15) and his son, by her, succeeded. This was not an isolated case. There were several Portuguese posts on the Los islands, which became a great depot for slaves bought on the mainland. Indeed, right through the eighteenth century the bulk of the colonization and trade of the Rivières du Sud remained in the hands of the Portuguese, who had settlements on the Casamance, at Bolama, on the Great Scarcies, and on the Sierra Leone. Many of the Portuguese were political exiles or convicted criminals with no hope or desire of returning to their own country. Leaving hard work to their slaves, they 'went native'; but their trade prospered and extended far inland. Other European nations followed the Portuguese example, and several families, still bearing British names, claim to be descended from British and American slave-traders. An Englishman at Timbo married the daughter of the Almami and a Frenchman succeeded to a native throne on the death of his father-in-law. One party of Portuguese is said to have set out to exploit the gold of Bambouk, but to have been massacred by the inhabitants.

At Cacheo there was a Portuguese governor, civil and military officials, and a Vicar-General, but the piety, learning, and morality of his monks left much to be desired. Trade was nominally reserved to a Portuguese company, but when, as happened with increasing frequency towards the end of the period, the company failed to send a ship, the Portuguese gladly purchased both necessities and trade goods carried in foreign bottoms.

The Slave Trade

In the heyday of the slave trade the ports of the Rivières du Sud were but feeble rivals to those of the Oil Rivers and of Dahomey. About the end of the seventeenth century 100 slaves were annually shipped from the Nunez, about 400 from Bissau, and about the same number from the Bissagos islands. As the eighteenth century drew to its close, many barracoons were erected along this coast, and, after the trade was proscribed, the navigational difficulties of the creeks rendered them ideal hiding-places from which to run the gauntlet of the patrolling cruisers. The Pongo, the mouth of which is guarded by strong currents and numerous sandbanks, was best suited for the purpose, and the Dabreka, the Nunez, the Mellacorée, and the Great Scarcies were also much used. Native chiefs did all in their power to help the trade, while putting every difficulty in the way of those who would suppress it. The King of Koba kept two pilots for the delta of the Pongo, whose connecting creeks, winding among the mangrove swamps to their many exits to the sea, were ideal for the purpose. All nations, including the Americans, continued the trade years after it had been proscribed by their governments. Financially it was worth it. In 1840, for example, Admiral Bouet-Willaumez calculated that, if only half the ships escaped capture, the trade yielded a profit of 140 per cent.

The Nineteenth Century

The Situation in 1814. The Peace of Paris of 30 May 1814 (confirmed at Vienna after the downfall of Napoleon) restored to the French their possessions on the west coast of Africa as they had been in 1792. It also marked the beginning of a period of 125 years in which the Powers concerned were free to develop their African possessions. Before 1814 French enterprise had been almost exclusively confined to Senegal, although there was a little French trade in the Rivières du Sud, and posts had been established in the Ivory Coast and in Dahomey. The peace treaty, besides restoring their possessions,

expressly preserved to the French the rights they had acquired concurrently with the English and Portuguese. These, so far as the Rivières du Sud were concerned, included trading posts on the Casamance, at Cacheo, at Bissau, at Bolama, on the Bissagos and Los islands, and on Gambia island, Sierra Leone. The last-named place, about 20 miles up the river from Freetown, had been a French slave factory till 1793, when it was evacuated. British troops took possession of it in 1802, and no French claim to it was subsequently made.

1815-1854. At the close of the Napoleonic Wars the British exercised no sovereign rights between the Gambia and Sierra Leone. Their economic influence, however, was supreme, and there is no doubt that, at any time up to 1850, the Sierra Leone protectorate might have been extended north all along the coast of French Guinea. The Sierra Leone Government, backed by the population of Freetown, was anxious to do this, but it received no support from home. Further political commitments on the west coast were not desired, and French influence was gradually extended, despite local protests.

In 1816 a British expedition left St. Louis (which was not actually handed over to the French till 1817) with the object of establishing political and trade relations with the tribes of Fouta Jalon. It was not well received. This was probably due to the destruction of the slaving station of Bangalam on the Pongo by Colonel Maxwell in 1814, and to the well-founded apprehension that the political influence of the British would destroy the profits of the trade. Delays owing to the refusal of the tribes to supply carriers caused the expedition to spend the rainy season of 1817 in the bush, and, after the death of its successive leaders, Peddie and Campbell, it made for Freetown with its mission unfulfilled. Later expeditions were more successful, however, and trade routes were opened from Fouta Jalon to Freetown.

In 1818 MacCarthy, Governor of Sierra Leone, obtained from the native chiefs the cession of the Los islands. His idea was that their salubrious climate would provide a sanatorium for jaded Europeans from Freetown. This proposal never materialized, but the islands were destined to be the seat of a British custom-house, and to be a thorn in the side of France, both strategically and economically, for many years to come.

In the same year Mollien, commissioned by the Governor of Senegal, visited Fouta Jalon, arrived at Timbo, and regained the coast through Portuguese Guinea at Bissau. Better received than his British competitors of the previous year, he did not conclude any

political treaties with the chiefs, but he made the natives aware of the existence of the French.

In 1827 René Caillié started his famous journey (Vol. I, p. 186) to Timbuktu from Kakundy, and traversed Fouta Jalon on his way to the Niger. He brought back valuable information, but his journey was without direct political significance to French Guinea.

Notwithstanding British penetration from Sierra Leone, French trade from Senegal expanded from 1828 onwards. By 1842 several French factories had been opened on the Rivières du Sud, notably at Boke on the Nunez. There were also British and American houses. The principal exports were ground-nuts, palm products, hides, and rubber. In 1849 a Frenchman started planting coffee at a place near the Nunez. A French man-of-war made an annual voyage down the coast to show the flag. Bouet-Willaumez made several treaties with the natives during such voyages and arranged facilities for French trade on payment of dues. In 1837 a French mission was sent by the Governor of Senegal to report on the possibilities of developing trade as far south as the Nunez. The mission, however, reported in favour of confining French official activities to the north of the Casamance.

In 1838 a new chief of the Landoumans, a tribe near the Nunez, celebrated his succession by attempting to raise the customary dues, in some instances quadrupling them. Several merchants refused to pay, whereupon their houses were burned, and an American and a British ship lying in the river were pillaged. British and French war-ships appeared successively, and order and the customary dues were restored. There was, however, continual trouble over the dues during the next ten years, and in 1848 the Bordeaux Chamber of Commerce petitioned the French Government to establish a military post on the Nunez. This was refused alike on grounds of economy and policy, but in the following year, on 5 April 1849, following a bombardment by the *Recherche*, Boke and the adjacent territory accepted French protection. This was the first French assumption of sovereignty in the Rivières du Sud, but it was not until 1866 that the fort at Boke was effectively garrisoned.

Freetown continued to be the trade metropolis of this area. Commercial treaties were signed with the chiefs as far north as the Pongo, and favourable terms were given to their goods coming into British territory for shipment from Freetown. Nevertheless, French merchants pushed south of the Pongo and negotiated treaties of commerce with the chiefs as far south as the Great Scarcies, whose lower reaches are now well within British territory.

Faidherbe and his Successors. In 1854 Faidherbe was appointed Governor of Senegal. His instructions and his inclinations were to use every means to extend French influence and to establish security in West Africa. His main activities were in Senegal and on the Niger, notably against El Hadj Omar. The latter's dominions were mainly in the central Niger basin, but the northern parts of Fouta Jalon and Bouré also fell under his rule.

The French and the British both had constant trouble with the natives. In 1855 H.M.S. *Teazer* bombarded Maliguiagbé on the Mellacorée as a reprisal for the burning of factories belonging to both nations. On landing to take possession of the town, which appeared to be abandoned, the British fell into an ambush in which heavy losses were suffered, and the affair resulted in some damage to British prestige.

Faidherbe's military and diplomatic successes in Senegal, on the other hand, so raised French influence that political penetration to the south was comparatively easy for him and for his successor Pinet-Laprade. On 25 March 1857 a treaty gave the French possession of both banks of the Cacine in Portuguese Guinea, where there were already three French factories. On 22 November 1865 the Almami of Forecaria placed himself and his subjects definitely 'under the suzerainty and protection of France', and in 1866 the Nalous and Landoumans, who lived between the Nunez and the Pongo, executed treaties in which the same words were used. The French had had trading posts on the latter river for many years previously in pursuance of treaty rights, and, as we have seen, had sovereignty over a very small area; but this was their first assumption of a protectorate over a native tribe as a whole. In 1866 Boke was garrisoned by French troops and a French administrator stationed there, and in 1867 the same thing happened at Benty.

It is impossible to set out in detail the French treaties with all the chiefs. Their terms were various. Some chiefs definitely accepted the suzerainty of France, while others guaranteed trading rights subject to fixed annual payments by each merchant. Sometimes the treaty stipulated for an annual subsidy from the French Government, usually in cash, in addition to, or in lieu of, payments by individual merchants.

About 1878 it became a common provision in such treaties that the chiefs should not cede any of their territory to any European Power without the consent of the French, and in return for this France agreed to pay an annual subsidy. The treaty with the King of

Bramaya of 14 June 1883 secured French influence by providing that only French schools should be established in his country. Whatever their terms, these treaties, whether of protection or commerce, gave the French a firm foothold on the coast. Although the territories which came under their influence were not accurately defined, the military posts became the headquarters of districts formed by grouping native states. The residents took the title of provincial commissioners (*commandants du cercle*) under the direction of the *commandant supérieur* at Goree. This was the genesis of the present French Guinea, and of this period the French historian Arcin truly remarks 'our residents at Boke, Dominia, and Benty became the arbiters of native policy from the Cacine to the Mellacorée'.

Native opinion in the Mellacorée region had not been wholly united in welcoming the suzerainty of France, and the disaffected appealed to Sierra Leone; but the governor, while transmitting their protest to London, refused to interfere.

Meanwhile the persistent rivalry of the local agents of the two Powers continued. In 1869 Winwood Reade visited Bouré in an attempt to open trade between the Niger and Sierra Leone. In 1872 and 1873 Dr. Blyden, a negro, passed through the Mellacorée basin and visited Timbo, then the chief town of Fouta Jalon. In return for the protection of British subjects and British trade, the Sierra Leone Government arranged to pay a subsidy of £100 per annum to its ruler, Ibrahim Sori.

Samory. Samory's dominions included only a small part of modern French Guinea, but, during the course of their campaigns against him, the French founded the posts of Faranah and Kissidougou. His chief importance, in fact, does not so much lie in the destruction that he wrought but in the opportunity he gave the French of occupying Fouta Jalon from the north.

Negotiations with other Powers. The British colony of the Gambia has been a nuisance to the French possessions since its foundation in 1618, but did not concern French Guinea. In 1868 the British put forward counter-suggestions, which would have secured to them sole political rights from Sierra Leone north to the Konkoure. The Franco-Prussian War interrupted negotiations, and although they were renewed after it, the oldest British colony on the west coast is still British, whilst French claims have prevailed south of the Pongo. Meanwhile Bolama, which had become British in 1826, was retroceded to the Portuguese in 1870 by an arbitral award of the President of the United States.

The establishment by the Sierra Leone Government in 1879 of a custom-house on the island of Kikonde at the mouth of the Great Scarcies did not prevent the French entering into treaties by which they assumed definite protectorates over Forecaria (17 January 1878), the lower Beréiré (22 January 1878), Kabak island (21 April 1880), and Dabreka (30 June 1882). The time was ripe for a full political settlement. This was effected by a Convention of 27 June 1882, which ceded the island of Matakong to the French, and, for the first time, laid down a frontier between Sierra Leone and French territory to the north. Great Britain was to have complete control of the Little Scarcies basin, and France of the basin of the Mellacorée and of all the coast to the north as far as the Nunez. Owing to objections raised in the French Chamber this convention was never ratified, but it was recognized for administrative purposes by both Powers, and formed the basis of the subsequent valid agreement.

By a decree of 12 October 1882 a separate administration was created for the Rivières du Sud and their dependencies, which included all French settlements as far east as Gabon. The Lieutenant-Governor of the Rivières du Sud was still, however, subordinate to the Governor of Senegal, and Dakar continued to be his headquarters. The first holder of the office was Dr. Bayol.

Having taken the first step to a settlement with Great Britain, France had to deal with German claims. About 1881 German factories under Colin and Jacob of the Deutsche Afrikanisches Gesellschaft had been established in the Dabreka region. On 31 December 1884 Germany annexed it, on the pretext that the territory between the Dabreka and the Konkoure belonged neither to Kaloum nor to Bramaya, with the chiefs of both which places the French had treaties of protection. In the following year, on information received from the local German merchants that the French had no rights at Kabitaye, Kalia, or Corréra, Dr. Nachtigal was sent in a German cruiser to occupy Corréra, whose chief accepted German suzerainty. This place, however, was clearly subordinate to Kaloum, which had accepted French protection in 1880, so that the situation was by no means free from complexity. After the Berlin Conference, the General Act of which did not affect French Guinea directly, a Franco-German Convention was signed on 24 December 1885. By this Germany renounced all rights and pretensions which she had over territory between the Nunez and the Mellacorée and recognized the sovereignty of France. A treaty of the 12 May 1886 provided for the delimitation of the frontier between Portuguese Guinea and the French posses-

sions encircling it, while the treaty with Great Britain of 10 August 1889 provided for the delimitation of the frontier between Sierra Leone and French Guinea on the lines of the stillborn treaty of 1882. Great Britain, however, retained the Los islands until 1904. The treaties with Germany, Portugal, and Great Britain all specifically recognized the French protectorate over Fouta Jalon.

Fouta Jalon

This mountainous interior of French Guinea, containing the sources of many West African rivers, had for a time been conquered by a mallam named Karamoko Alfa, who had proclaimed himself Almami of Fouta Jalon. Later, as the result of internal dissension, power was for a short time divided between two almamis. They jointly directed a federation composed of a number of provinces, each under its own ruler.

France owed much of her success in Fouta Jalon to Olivier de Sanderval, an unofficial trader acting for a Marseilles house, who came first to Portuguese Guinea. Trading successfully as far south as the Compony, he set out early in 1880 from the Corubal with the expressed intention of exploring the gold-mining country of Bouré. He reached no farther than Timbo, the capital of Fouta Jalon, where he at once acquired a commanding influence and secured a concession for a railway from the coast. He further obtained wide lands in Kahel, north of Timbo. Over these he ruled as absolute sovereign, maintaining his own army and coining his own money. Because of his influence the Almami refused to put himself under British protection, but accepted the protection of France in a treaty of 5 July 1881. By the same treaty provision was made for French commerce, and French merchants were authorized to trade on payment of fixed dues. The French Government also agreed to pay yearly subsidies to the chiefs, who were, in return, to keep open the routes to the coast. Although occupation did not follow until 1896 and the country meanwhile was not entirely peaceful, this protectorate was expressly recognized by the British in the treaty of 1889.

In 1888 Galliéni, commanding on the upper Niger, planned to penetrate Fouta Jalon from the north. He sent two missions, of which one, under Plat, was primarily political and was helped by de Sanderval. A treaty signed on 30 March 1888 confirmed French commercial rights and the protectorate of France, but, strangely enough, suppressed the subsidies. The chiefs who had observed the earlier treaty naturally signed with a bad grace, particularly as the

emissary came from Samory's country, which they regarded as enemy territory. The treaty was not ratified, and Bayol, the Lieutenant-Governor, continued the payments. The other mission sent by Gallieni was a company of tirailleurs under Audéoud which crossed into Fouta Jalon in December. It was anything but welcome to the inhabitants, but no untoward event occurred during its progress. It proceeded to Benty, where it aided in quelling one of the constant tribal wars.

In 1890 the French Government raised the question of installing a Resident at Timbo. The inhabitants of that part were suspected of intrigues with Samory, and of being too Anglophil for French liking. At this moment there was a disputed succession and the country was in a state of civil war, one party being for Oumar Bademba and the other for Bokar Biro. The latter was recognized by the French, and, in drawing his allowance at Dabreka in October 1890, protested his loyalty. Further agreements were signed in 1891 and 1893 at Timbo. In these local chiefs again asseverated their friendship for France and undertook in no way to help her enemies; but they objected to receiving a Resident, and none was installed at that time.

Bokar Biro put to death his brother Mamadu Paté, a man of much influence and a sincere admirer of France, and there was little doubt that, despite his protestations, he was secretly in league with Samory. The fortunes of the civil war varied. Finally, the French decided that an end must be put to disorder, and, convinced of Bokar Biro's duplicity, they supported Oumar Bademba. A military expedition was sent and Bokar Biro fled. Timbo was occupied on 3 November 1896, Oumar Bademba installed as Almami, and de Beeckman appointed as administrator. Bokar Biro was pursued by French troops and by de Sanderval's army, and was heavily defeated. He escaped from the field, but fell into the hands of his enemies, who cut off his head. Oumar Bademba signed a new treaty on 6 February 1897. It provided that chiefs were to be elected as before, but subject to the approval of the French. Their powers were to be exercised under the advice of the French, who were at liberty to establish civil and military posts throughout Fouta Jalon and to execute such works as they should see fit. There were to be further conventions as to taxation. Though he signed the treaty, Oumar Bademba did so reluctantly, and shortly afterwards abdicated.

In July 1897 the chiefs agreed to accept the abolition of the slave trade and of the savage punishment of criminals. Justice was to be administered by a central Court of Appeal composed of three judges,

with the President of the Council of the Ancients at their head. Each province was also to have its own Court of Appeal. As regards taxation, it was decided that all arbitrary requisitions should cease, whilst the *sakha*, a religious tax, should only be tolerated as a voluntary payment. In their place a tax of 2 francs per head, or, until there should be a census, of 10 francs per house, was to be imposed. This was to be collected by the chiefs. Two francs were to go to the village chief, 2 francs to the provincial chief, 2 francs to the Almami, and the remaining 4 francs to the French for police, upkeep of roads, education, and other administrative purposes. In its early years the tax might be paid in kind, subject to the consent of the local Resident. The system, which had first been introduced in French Guinea at Faranah in 1896, was extended to the whole of the colony by an order dated 28 December 1897. It is still the main source of direct taxation.

Despite the obstructive attitude of some of the chiefs, the capitation tax was from the outset a success throughout French Guinea, as the colony had now become. In 1898, the first year that it was universal, it yielded to the Government 515,293 francs, growing in 1904 to 3,668,229 francs and in 1936 to no less than 29,000,000 francs.

The arrangement with Fouta Jalon has been described at some length, as it shows the patience of the French at this era and their reluctance to abolish native institutions; but in this instance, as in all other French colonies in West Africa, direct administration was merely deferred. Though the protectorate was accepted by the mass of the people, the ruling classes caused trouble for some years. In November 1897 an incipient revolt headed by Tierno Siré, a brother of Bokar Biro, was quelled, and in 1900 the annexation of Labé led to a rising during which the newly created French post of Ditinn was attacked. Punitive operations followed, and several of the leaders were executed. It became clear that, in the interests of peace, the Constitution could not be allowed to stand. Partly by curtailing the powers of the chiefs and partly by splitting up the country into smaller areas, the protectorate was gradually replaced by direct administration. Fouta Jalon is now divided into cantons, whose chiefs are appointed by the Government in precisely the same way, and have precisely the same duties and powers, as in the rest of French West Africa.

By 1900 Fouta Jalon was quiet, and France's main work of penetration was done. The last fighting in this region took place in 1911, when the Goumbas, roused by a holy man named Tierno Aliou, murdered two French officers. A punitive expedition was sent, and

the holy man escaped into British territory. He was handed over, and soon afterwards died at Conakry.

The Modern Colony

French Guinea and the Federation. A decree of 1 August 1889 gave a separate budget to the Rivières du Sud. The Lieutenant-Governor received the right of direct correspondence with Paris, but he was also bound to report to the Governor of Senegal, to whom he was still subordinate. French establishments farther along the coast remained under the supervision of the Lieutenant-Governor. This decree took effect on 1 January 1890. By that time the provinces of Dinguiraye, Siguiro, Kissidougou, Kouroussa, Kankan, and Beyla had been added to the colony, which then assumed its present shape. A decree of 17 December 1891 gave the Rivières du Sud a governor and complete independence of Senegal. A decree of 10 March 1893 changed the colony's name to French Guinea, and at the same time relieved its governor of all responsibilities for French possessions farther south.

On 10 August 1889 was signed the Anglo-French Convention which, among other points, recognized the French protectorate over Fouta Jalon and settled the frontier between Sierra Leone and French Guinea. This frontier, modified by subsequent agreements of 12 July 1893 and 21 January 1895, was demarcated on the ground by a mixed commission during 1895-1896. It was further modified in 1913.

The measures by which French Guinea became one of the constituent colonies of French West Africa and the division of powers between the Governor-General and the governors of the individual colonies are summarized in Appendix A.

The Liberian Frontier. The last tribes of French Guinea to be pacified were the Tomas, who lived on the borders of Liberia. In 1904, owing to disturbances there, it was decided to take disciplinary action and to form a temporary military area entirely independent of the civil power. Police operations went on for the next three years, but suffered a severe set-back during the attack on Boussédou in February 1906. Success was achieved next year, however, when, in their flight, the Tomas left many arms of precision on the ground. The papers found on the body of a Swiss named Wolz, who was killed in the engagement, showed that he had supplied arms while receiving the Governor's hospitality. The operations were enough to convince the Tomas of the reality of French power, but at this moment Liberia intervened with a frontier question. The treaty of 8 December 1892

purporting to settle the frontier, being based on inadequate knowledge, had been found unworkable. A new treaty was signed on 18 September 1907 during President Barclay's visit to Europe, where he had vainly tried to enlist German support. Barclay was the first president who had attempted to extend his Government's authority inland, and the appearance of his newly raised frontier guards, badly disciplined and badly paid, further complicated the situation. Delimitation was begun in 1909, but the boundary was not finally agreed until the convention of 1911. Risings, which had their origin either in the Ivory Coast or in Liberia, kept the south-east corner of French Guinea in a state of some disturbance for another four or five years.

The War of 1914-1918. In the War of 1914-1918 French Guinea contributed 20,000 soldiers. Between 1917 and 1919, 15,000 tons of cereals and oil products were sent to France from the colony and 5,000 tons of rice to neighbouring colonies and to the Cameroons.

The political history of the colony since that war calls for no comment.

Christianity

The earliest missionaries were the Portuguese priests who accompanied their traders and slave dealers. They assisted the latter on the principle that it would be easier to convert men in captivity than in a state of freedom. On the whole they have not left a very good reputation, and the work of even the most zealous was ruined by the conduct of Portuguese laymen. The last record of Portuguese missions is of one on the lower Pongo in 1787.

A Scottish mission sent soon after met with some initial success; but after the murder of one member of the mission and the invaliding of others the venture was abandoned.

In 1804 two German Lutheran clergymen arrived in Sierra Leone under the auspices of the Church Missionary Society, and carried on work on the Pongo up to 1818, when the mission was withdrawn to Sierra Leone. Some forty years later, to commemorate the 150th anniversary of the foundation of the Society for the Propagation of the Gospel, the West Indian Church, composed of descendants of freed slaves, decided to send a mission to the Pongo as a thank-offering for its own blessings. In 1855 it started work with two missionaries, of whom one, a European called James Leacock, died at Freetown in the following year. The poverty of the West Indians did not make easy the support of their men, and the work was further handicapped by the educational regulations of the French

Government, which required that all teaching must be carried on in French. Supervision was difficult, for the Bishop of Sierra Leone was fully occupied with more immediate work. The headquarters of the mission was in the Los islands, and those islands were ceded to France in 1904. In spite of all these handicaps, the mission managed to struggle on, and in 1935 it was transferred to the newly created diocese of Gambia. This diocese comes directly under the Archbishop of Canterbury. At the outbreak of the present war the mission was still carrying on its work, and was still being supported by the West Indian Church.

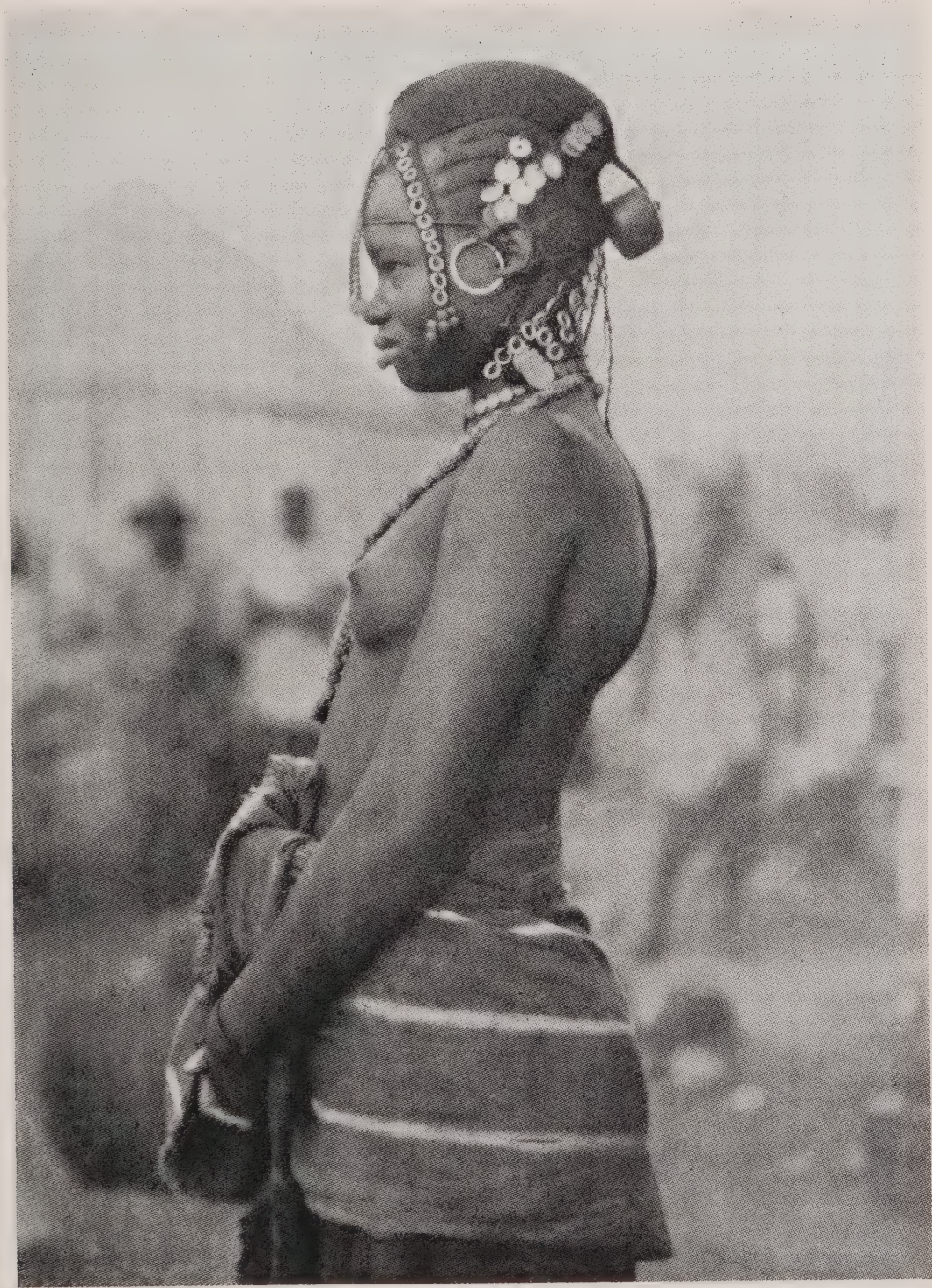
French Roman Catholic missions were first entrusted to the Lyons Society of African Missions. The Vicariate Apostolic of the Two Guineas was created in 1842, and that of Sierra Leone, carved out of it in 1858, had jurisdiction from the Nunez to the Cavally. The first Vicar Apostolic landed in Sierra Leone in March 1859, and by June of the same year he and all his priests had died or had been invalided home. In 1864 Roman Catholic priests of the Order of the Holy Spirit took up work in the Rivières du Sud, and were followed in 1866 by Sisters of St. Joseph of Cluny. The work continued under Sierra Leone till 1897, when Conakry became the seat of an independent Vicar Apostolic. In this and the following years six schools were opened by the mission in French Guinea, and up to the end of the nineteenth century such education as existed was solely due to missionary enterprise. The work of Roman Catholic missions also includes medical activities.

To-day French Guinea, with some 2,000,000 inhabitants, has not more than 7,000 Christians of all denominations, of whom 6,000 are Roman Catholics.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

FRENCH Guinea is fortunate in having no large areas of infertile land, so that the density figure of 21·31 persons per square mile is a more accurate index to the actual distribution than is the case with most of the other colonies. The greatest concentration is in the north-western part of Fouta Jalon, where there are more than 50 inhabitants, mostly Fulani, per square mile. Other areas above the average are the provinces of Boffa, Dabreka, and Forecaria, near Conakry, and



28. *A Diakanke girl*



29. Conakry: a fountain



30. Conakry: the hospital

those parts which adjoin Liberia. A region with less than 8 persons per square mile is just west of Siguiri.

The population has not increased at an even rate; and, indeed, the latest figures represent a decline from their predecessors. The Census of 1921 recorded 1,875,996 persons, that of 1926 2,095,988, that of 1931 2,236,968, and that of 1937 2,065,527.

Natives. Between one-third and one-half of the natives in French Guinea are Fulani, who number more than 850,000. There are over 500,000 Mandingos, over 250,000 Soussou, some 170,000 Kissi, and over 150,000 Guerzés.

In 1936 there were 319 native citizens.

Europeans. In 1937 there were 3,428 Europeans.

INLAND TOWNS

DABOLA ($10^{\circ} 45'$; $11^{\circ} 04'$ W.). Altitude, 1,430 feet. Population, 3,288. Provincial headquarters. Dispensary. Meteorological station. Emergency landing-ground. Daily market.

The modern town, 2 miles north-north-west of the old native settlement of the same name, lies at the foot of the Oursa massif. It is on a little tributary of the Tinkisso. The town owes much of its importance to the railway and to the fact that it is a road junction. The intercolonial road southwards to Kissidougou (166 miles) and the Ivory Coast branches from that from Conakry to Bamako. Dabola is 275 miles from Conakry by railway and 295 miles by road.

DALABA ($10^{\circ} 44'$; $12^{\circ} 12'$ W.). Altitude 3,650 feet. Population, 600. District headquarters. Dispensary. Hotel. Zoological and botanical gardens.

Dalaba, sometimes called Dalabakala, is $1\frac{1}{2}$ miles from the intercolonial road and 36 miles from Mamou. It is set amongst some of the finest scenery in Fouta Jalon and is a tourist centre. There is a Protestant rest-house, open to visitors from 1 November to 30 April. The botanical gardens include an experimental plantation of coffee shrubs, which was started in 1906.

DINGUIRAYE ($11^{\circ} 19'$; $10^{\circ} 48'$ W.). Altitude, 1,378 feet. Population, 3,368. District headquarters.

This town is 43 miles by colonial road from Bissikrima. A focus for local tracks, it is a Moslem centre and contains the Mosque of El Hadj Omar. The mosque's eponymous founder (Vol. I, p. 189) made Dinguiraye his capital for a short time.

GAOUAL ($11^{\circ} 45'$; $13^{\circ} 12'$ W.). Altitude, 328 feet. Provincial headquarters. Custom-house. Medical post. Emergency landing-grounds. Wireless station. Market twice a week.

Gaoual has been built on the left bank of the Tomine at the point where it receives its tributary the Komba. A rough road connects the town to the intercolonial road, 11 miles to the east.

GUÉKÉDOU ($8^{\circ} 32'$; $10^{\circ} 10'$ W.). Altitude, 1,427 feet. Population, c. 800. Provincial headquarters. Custom-house. Dispensary and maternity home. Meteorological station. Wireless station. Roman Catholic mission. Weekly market.

In the middle of the mountainous country bordering Liberia, Guékédou is the place where the intercolonial road from Dabola (225 miles) turns east to Macenta (64 miles). A colonial road runs westward from it into Sierra Leone.

KANKAN ($10^{\circ} 21'$; $9^{\circ} 14'$ W.). Altitude, 1,214 feet. Population, 9,750, including 125 Europeans. Mixed Commune. Provincial headquarters. Medical post. Police station. Barracks. Emergency landing-ground. Wireless station. Protestant and Roman Catholic missions. Orphanage. Hotel. Garages. Agricultural experimental station. Market twice a week.

Kankan is on the left bank of the Milo and at the northern edge of the grass-woodlands of the Guinea subzone. It is a route centre of the first importance, being the terminus of the railway from Conakry (410 miles) and of the steamer service (p. 219) downstream to Bamako (226 miles). The town is also the focal point of colonial roads from Kouroussa (56 miles), Niandan-Koro (55 miles), Mandiana (52 miles), Bissandougou (36 miles), and Nafadié (62 miles). The agricultural experimental station pays special attention to cotton, and there is a school of ploughing attached to it. From 1911 to 1920 Kankan had its own Chamber of Commerce. The market does a big trade in kola nuts, palm products, and wild rubber.

KINDIA ($10^{\circ} 03'$; $12^{\circ} 50'$ W.). Altitude, 1,378 feet. Mixed Commune. Provincial headquarters. Medical post. Barracks. Police station. Emergency landing-ground. Wireless station. Regional School. Roman Catholic mission. Hotel and sanatorium. Railway workshops. Agricultural experimental station. Daily market.

In 1904 the railway from Conakry (92 miles) reached the foot of Mount Gangan, and the position appeared suitable for a health resort

for Europeans. It has proved very popular, and many citizens of Conakry and other coastal towns come to Kindia for a holiday in the hill country. The agricultural experimental station was set up in 1930. There is also a branch of the Pasteur Institute, which does special research into the diseases of anthropoid apes. The town has a considerable commercial importance as containing the offices of many firms engaged in the banana trade. It is also the headquarters of the 4th Battalion of the Senegalese Tirailleurs.

KOUROUSSA ($10^{\circ} 39'$; $9^{\circ} 52'$ W.). Altitude, 1,250 feet. Population, 6,355. Provincial headquarters. Medical post. Main meteorological station. Emergency landing-ground. Hotel. Garage. Railway workshops.

Kouroussa is on the left bank of the Niger, 16 miles above where that river is joined by the Niandan. It is 366 miles from Conakry by railway and 397 miles by intercolonial road. The latter continues along the left bank of the Niger to Siguiri (95 miles) and Bamako (228 miles). Sixteen miles along this road the colonial road to Kankan (56 miles) crosses the Niger by ferry. The railway crosses the river at the town itself. There is a steamer service (p. 219) to Bamako (222 miles). The landing-ground is on the east bank of the river, $2\frac{1}{2}$ miles south-south-east of the town. There is a cotton ginnery, and, near by, a sisal plantation.

LABÉ ($11^{\circ} 15'$; $12^{\circ} 12'$ W.). Altitude, 3,445 feet. Population, 9,380, including 128 Europeans. Provincial headquarters. Medical post. Meteorological station. Emergency landing-ground. Wireless station. Regional School. Protestant mission. Garage.

Labé is an important route centre in a mountainous region. By the intercolonial road it is 87 miles from Mamou and 180 miles from the border of Senegal. Colonial roads run to Mali (84 miles), Tougue (54 miles), and Téliélé (87 miles). There is a weekly postal service from Mamou. The Regional School has a technical section.

MACENTA ($8^{\circ} 30'$; $9^{\circ} 32'$ W.). Altitude, 1,969 feet. Population, 1,625. Provincial headquarters. Medical post. Barracks. Meteorological station. Emergency landing-ground. Wireless station. Weekly market.

Situated close to the Liberian frontier on a hill overlooking the valley of the Loffa, Macenta is surrounded by some of the most striking and picturesque scenery in the whole of Fouta Jalon. The country not only presents sharp differences of elevation but it is also

thickly forested and well watered. The town itself stands on the intercolonial road, 64 miles from Guékédou and 83 miles from N'Zérékoré, and by colonial road is 54 miles from Konsankoro. There are also many native tracks.

MAMOU ($10^{\circ} 21'$; $12^{\circ} 03'$ W.). Altitude, 2,428 feet. Population, 3,828, including 191 Europeans. Provincial headquarters. Medical post. Meteorological station. Emergency landing-ground. Regional School. Orphanage. Hotel. Garage. Railway workshops. Agricultural experimental station.

Like Kindia, this town owes its existence to the railway. Founded in 1908, it has rapidly grown to its present size. It is one of the chief route centres of the colony; for not only is it the end of the first section of the railway but also it is the junction of the main east-west intercolonial road with that coming south from Senegal. There are also several tracks. By road, therefore, Mamou is 181 miles from Conakry, 87 miles from Labé, and 114 miles from Dabola. By railway it is 183 miles from Conakry and 227 miles from Kankan. It is on the right bank of the little river Mamou, and is a health resort and hill station for Europeans. The surrounding country is well stocked with game and provides good shooting. The landing-ground is to the west of the town on a broad saddle-back surrounded by hills. A new site is in process of being cleared.

SIGUIRI ($11^{\circ} 26'$; $9^{\circ} 08'$ W.). Altitude, 1,135 feet. Population, 7,104. Provincial headquarters. Medical post. Landing-ground. Wireless station. Regional School. Protestant and Roman Catholic missions. Garage. Daily market.

Siguiiri is on the left bank of the Niger 5 miles below its confluence with the Tinkisso. The town is well known as being the centre of the only important gold workings of the Federation. It is the meeting-place of several native tracks, and it is on the intercolonial road. By the latter it is 95 miles from Kouroussa and 133 miles from Bamako. There is a steamer service (p. 219) to Bamako, which is 131 miles distant by river. The landing-ground, opened in 1924, has a lateritic surface and is liable to flooding.

9. ADMINISTRATION

Councils

FRENCH Guinea sends a delegate to the Supreme Council of the French Colonial Empire.

The Executive Council is composed of the Governor, the Secretary-General, the Delegate to the Supreme Council, the Attorney-General, the officer commanding the troops, two citizens, and three subjects. The two citizens are elected, one by the Chamber of Commerce and one by the Chamber of Agriculture and Industry, for a term of two years. The three subjects are elected by a native electoral college for the same term.

The Standing Committee consists of the Secretary-General, the Attorney-General, one citizen, and one subject.

Territorial Divisions

In 1938 the colony was divided into eighteen provinces (Fig. 17) taking their names from their headquarters towns. These are as follows:

<i>Province and headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Beyla	6,815	..
Boffa	3,514	..
Boke	4,961	..
Conakry	154	..
Dabola	11,589	Dinguiraye, Faranah
Dabreka	2,394	..
Forecaria	1,674	..
Gaoual	6,661	Youkounkoun
Guékédou	1,699	..
Kankan	11,467	..
Kindia	5,119	Télimélé
Kissidougou	3,668	..
Kouroussa	4,556	..
Labé	9,189	Mali, Tougue
Macenta	3,243	..
Mamou	6,579	Dalaba, Timbo
N'Zérékoré	4,556	..
Siguiri	9,073	..

The average area is some 5,300 square miles, or about $1\frac{1}{4}$ times the size of the Gambia.

Communes. There are three mixed communes: Conakry, Kankan, and Kindia. In each of them an administrative officer is appointed by the Governor as administrator-mayor, and he is assisted by a nominated council composed of citizens and subjects in equal numbers.

The Chamber of Commerce at Conakry was founded in 1906, and there is also a Chamber of Agriculture and Industry, whose constitution was revised in 1932.

Courts of Law

The Court of Assize, the Tribunal of First Instance, and the Colonial Court of Appeal all sit at Conakry.

Native Organization

The system of native chiefs presents no exceptional features, but it may be noted that, before they were finally abolished, considerable efforts were made to retain the old chiefdoms in Fouta Jalon.

Land Tenure

By 31 December 1937 provisional concessions had been granted over an area of 61 square miles and concessions over an area of 28 square miles. By the same date 1,470 certificates of title, covering 59 square miles, had been issued under the immatriculation system and 61 certificates, covering 8 square miles, under the system of Confirmation of Native Land Rights.

Labour

In 1935 there were 596,100 persons on the forced labour rolls, 2,705,000 man-days were worked, and 114,300 francs were paid in redemption money. In 1936, 500 labourers worked under written contract for European firms, and 12,200 worked on verbal agreements. For public services there were 3,800 labourers working, all without written contract.

Agriculture

The Department of Agriculture was created in 1898, but its sole original function was to manage the experimental station at Camayenne near Conakry. In 1913 it was reorganized and a travelling inspectorate instituted, but from 1914 to 1929 it was almost non-existent. It was revived by an order of 29 January 1932.

The colony is divided into four agricultural districts (*circonscriptions*): (i) Basse-Guinée, comprising the provinces of Boffa, Boke, Conakry, Dabreka, Forecaria, and Kindia, with headquarters at Conakry; (ii) Moyenne-Guinée, comprising the provinces of Gaoual, Labé, and Mamou, with headquarters at Mamou; (iii) Haute-Guinée, comprising the provinces of Dabola, Kankan, Kouroussa, and Siguiri, with headquarters at Kankan; and (iv) Forêt, comprising the provinces of Beyla, Guékédou, Kissidougou, Macenta, and N'Zérékoré, with headquarters at Kissidougou.

There are experimental stations (p. 150) at Benty, Camayenne, Fotoba, Kankan, Kébalé, Kindia, Kissidougou, Sébouri, and Tolo.

The staff of the Department of Agriculture rose from 6 in 1931 to 17 in 1935. There is no separate forestry service.



FIG. 17. *French Guinea: Administrative Divisions*

Produce Inspection. The Office Guinéen du Caoutchouc was instituted in 1916 under the Chamber of Commerce to safeguard the purity of the rubber exported. By an order of 3 November 1932 it was renamed the Office des Produits Guinéens, and it now ensures the inspection of fourteen of the principal agricultural products. It has a director, an assistant director, several regional inspectors, and a staff of controllers and agents. Inspection takes place at Conakry and at twenty-five out-stations. At each of these there is a committee of merchants nominated by the Chamber of Commerce and presided over by the provincial commissioner. No produce may be put on the railway or exported by sea without a certificate of quality. Produce not up to standard may be destroyed and its owners

prosecuted. From a refusal to issue a certificate an appeal lies to a board composed of two non-official producers presided over by the Director of Agriculture.

Native Provident Societies. There are eighteen Native Provident Societies, one to each province. They had their origin in the three reserve granaries of Labé, Kouroussa, and Mellacorée established in 1907. Their present constitution rests on orders of 1932 and 1933, and in 1935 they had over 1,800,000 members. For 1937 their receipts were just under 3,000,000 francs and their expenses just over that sum, the deficit being made up out of reserve funds. In 1935 the Labé Society had over 300,000 young coffee plants in its nurseries, and the Macenta Society 100,000. In 1934 the Boke Society installed a rice mill at Bentimodia.

Mining

The following permits were in force at the end of 1937:

Personal licences	15
The Occupation System	
Exclusive licences	128
Mining licences	80
Concessions	4
The Royalty System	
General licence	1
Total	<u>228</u>

By an order of 3 May 1905 gold has been reserved for native miners in certain districts and special regulations govern its working. These districts are mainly in the provinces of Kouroussa, Kankan, and Siguiri. The native shafts sometimes attain a depth of 60 feet, and there are alluvial workings as well. The mines attract natives from all parts of the Federation, and it is estimated that there is an influx of 10,000 persons during the first six months of every year and that the industry gives direct or indirect employment to at least 60,000. In 1937 out of an export from the whole of French West Africa of 128,175 fine ounces of gold (of which 94,438 oz. were from French Guinea) only 2,728 fine ounces were won by Europeans. In the same year the value of gold dug by natives was 57,000,000 francs (£458,900).

The duties payable on mineral products in 1937 were as follows: for gold, 35 per cent. of the value (which was fixed at 23 francs per gramme); for diamonds, 5 per cent. of the value (which was fixed at 10 francs per carat); and for other minerals, 50 per cent. of the value. All the values were fixed by the Governor-General. These duties contributed 1,920,000 francs to the local budget.

Education

The educational system has few noteworthy features. The first of the mission schools was opened at Boffa in 1878 by the Roman Catholics. It was moved to Conakry in 1890. Three years later, the first girls' school was opened at Conakry by the Sisters of St. Joseph of Cluny, but in 1898 the total number of pupils in the colony was only 363. No Government schools were opened until 1903.

In 1938 there were 42 European teachers in the Government schools and 101 native. There were 60 recognized schools altogether, arranged as follows:

	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total pupils</i>
GOVERNMENT SCHOOLS				
<i>Primary</i>				
Village schools	43	3,263	495	3,758
Regional schools	10	2,845	354	3,199
Urban schools	2	641	178	819
Totals	55	6,749	1,027	7,776
<i>Higher Primary</i>	1	62	..	62
<i>Technical</i>	1	130	..	130
PRIVATE SCHOOLS				
<i>Mission Schools</i>	3	606	346	952
Totals	60	7,547	1,373	8,920

In addition there were 2,250 Moslem schools, giving instruction in the Koran to 18,900 pupils.

As in other colonies, practical training plays a large part in the curriculum of all schools. Special agricultural work is done at Kankan, Kindia, and Sigui, and the local industry of weaving is given particular importance at N'Zérékoré.

Health

The following table shows the growth of the medical staff between 1927 and 1938.

	1927	1938
Europeans		
Medical officers	16	25
Natives		
Auxiliary medical staff	10	32
Midwives	12	27
Hospital nurses	93	149
Visiting nurses	0	4

In 1938 there were 15 medical stations in charge of Europeans and 12 medical posts in charge of native auxiliaries.

There is one major hospital (at Conakry), 28 minor hospitals and dispensaries, and 20 maternity centres. Between them these provide beds for 80 Europeans and 718 natives.

Besides these regular services there were in 1937 two travelling units to deal with sleeping-sickness. Each was headed by a European doctor, who had a staff of native auxiliaries and attendants.

10. PORTS

VICTORIA (10° 48'; 14° 33' W.). Population, 1,269. Custom-house.

Victoria is a trading station about 18 miles above the entrance to the Nunez river. The river, though it has many shoals, has no bar, and vessels of 9½ feet draught can ascend to the settlement. Here the river divides, the eastern branch continuing as the Nunez, the western becoming the Tessagoua. Ships anchor in 12 feet of water about 4 cables off shore. The pier is in front of the custom-house, near which a light is shown from a height of 33 feet. There are warehouses and a post and telegraph office. Rubber, rice, ground-nuts, and palm oil are exported.

BOKE (10° 56'; 14° 15' W.). Population, 2,715, including 108 Europeans. Provincial headquarters. Custom-house. Dispensary. Emergency landing-ground. Wireless station. Protestant and Roman Catholic missions.

Boke lies 25 miles up-river from Victoria and, as a port, is second only to Conakry. It has a regular steamer service with coastal ports, and vessels of 7 feet draught can proceed there at high water. There is a post and telegraph office and an agricultural training school.

There is trade in rice, kola nuts, tobacco, copal, rubber, ground-nuts, sesame, and palm oil.

Communications

Road. A colonial road runs south to Boffa (78 miles) and Conakry (167 miles). A minor road runs inland to Koumbia, Gaoual, and the intercolonial road to Dakar.

Air. There is a landing-ground at Baralandé, 3 miles north of the town.

BOFFA ($10^{\circ} 12'$; $14^{\circ} 04' W.$). Population, 498, including 13 Europeans. Provincial headquarters. Custom-house. Dispensary. Roman Catholic mission.

Boffa is on the north bank of the delta of the Pongo river, about 10 miles from the sea. It is approached by a tortuous channel, but vessels of 16 feet draught can cross the bar at high water. Lying as it does beyond the mangrove belt, Boffa is the trading centre for the numerous villages in its neighbourhood. It has a post and telegraph office; there are several warehouses on the south bank; and the delta, south-south-west of the town, affords a sheltered anchorage for sea-planes. Trade is carried on in rubber, hides, wax, gum, ground-nuts, sesame, palm oil, palm kernels, and kola nuts.

Communications

Road. Boffa is on the colonial road, being 78 miles from Boke and 89 miles from Conakry.

CONAKRY ($9^{\circ} 31'$; $13^{\circ} 43' W.$). Population, 13,588, including 796 Europeans. Colonial capital. Mixed commune. Provincial headquarters. Custom-house. Law courts. Hospital. Barracks. Police headquarters. Main meteorological station. Landing-ground. Wireless station. Technical, Higher Primary, Urban, and Regional Schools. Orphanage. Bank of West Africa. Prison. Hotels. Garages. Railway workshops. Cinemas. Sports stadium. Botanical gardens. Daily market.

The Town

In 1885 Tumbo island (p. 107), the site of Conakry, was ceded to the French by the local chief. The town, which is well planned with shady boulevards, has the usual administrative buildings necessary to a colonial capital, a large post and telegraph office, a Town Hall, and Chambers of Commerce and Agriculture. Of the two hotels, the Grand is listed as first class.

Trade

Conakry is the fourth port of French West Africa, although only 4 per cent. of the total trade passes through it. This is due to the inferior facilities available in comparison with those of Dakar. Its export trade in bananas has, however, been developed to a marked degree. In 1931 only 10,826 tons were exported, but by 1937 this figure had risen to 54,131 tons. Refrigerated warehouses and cold-storage ships, with a hold temperature of $54^{\circ} F.$, have been built for

this trade. Other exports are gold, palm kernels, orange essence, coffee, hides, rubber, and wax. Cotton and metal goods, salt, motor-cars, petrol, and fertilizers are imported.

At Camayenne, on the mainland 2 miles north-east of the town, there is an experimental station for the culture of rubber, pineapples, and bananas.

Description of Port

Conakry has the only natural basin in French West Africa. Lying off the north-west of Tumbo, it is about 1 mile long and 2 cables broad, with depths varying from 3 to 5 fathoms. A breakwater over 1,500 yards long has recently been constructed parallel to and about $\frac{1}{2}$ mile from the north-west shore of the island.

Boulbiné lighthouse (Plate 25) stands on a laterite reef, fronting Dragonnier cove, south-west of Tumbo and close to the best anchorage for ocean-going vessels. This reef appears to be an ideal natural feature for the construction of a deep-water quay and for the consequent development of a more accessible port. No work of this kind has, however, yet been attempted.

Anchorage. There are two anchorages: (i) in the basin and 2 cables off the north-west of Tumbo with a depth in the centre of 4 fathoms; and (ii) in $3\frac{1}{2}$ –4 fathoms, east of Kassa and 5 cables south-west of Tumbo.

Quays and Wharfs. The Government Wharf has a depth along its outer end of $19\frac{1}{2}$ feet, over a length of 800 feet. The bottom is soft mud, enabling vessels of 23 feet draught to lie aground safely at low water. Depth in the inner harbour is also 23 feet. There is a quay for coasting vessels, east of the inner end of Government Wharf. South-west of Government Wharf, Banana Boats quay, 980 feet long, has a draught alongside of 22 feet in the dry season, but, owing to silting, this is reduced to 18 feet in the rainy season.

Warehouses. A special banana warehouse (Plate 34) is a feature of the port. There are also other warehouses and a refrigerating plant.

Equipment. There are five 3-ton cranes on rails and there is one 60-ton floating crane. There is also a 25-ton crane on rails belonging to the railway company. The port has several tugs up to 80 tons and one of 150 tons. There is a dry dock and a small slipway, while the port and railway workshops undertake running repairs.

Communications

Rail. Conakry is the terminus of the only railway in the colony, which goes to Kindia (92 miles), Kouroussa (366 miles), and Kankan



31. *Conakry: a silk-cotton tree on the harbour front*



32. *Conakry: the Avenue de Commerce*



33. *Conakry: the Government Wharf*



34. *Conakry: the banana warehouse*

(410 miles). The station is 1,200 yards from the harbour, to which it is joined by a branch.

Road. The town is the coastal terminus of the intercolonial road that runs to Mamou (181 miles), Dabola (295 miles), Kouroussa (397 miles), and Bamako (625 miles). Twenty miles from Conakry the

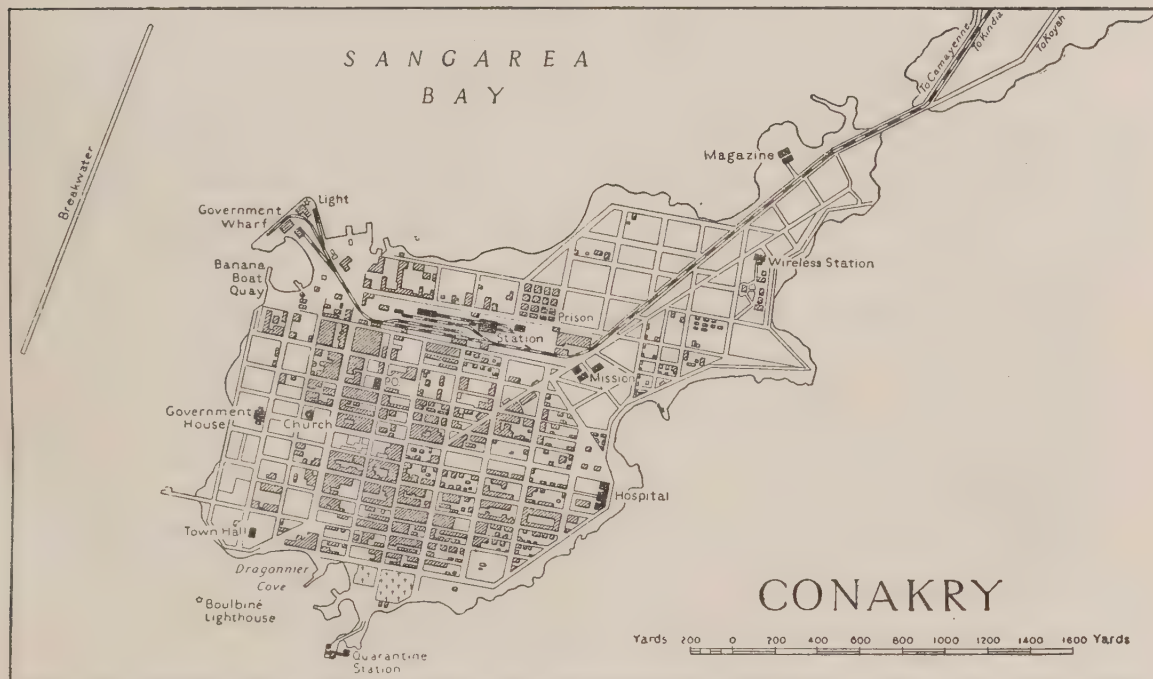


FIG. 18. *Conakry*

colonial road bears north to Boffa (89 miles) and Boke (167 miles), and at Koyah, 11 miles farther, the coastal intercolonial road turns south-east for Pamelap.

Air. The airfield lies about 6 miles north-east of the town. Its surface is laterite and there are two runways, respectively 980 and 750 yards long and 430 and 54 yards wide. There is regular communication by Aéromaritime with Dakar in one direction and with Monrovia, Abidjan, Accra, Cotonou, Lagos, and Pointe Noire in the other.

There is a seaplane harbour north-north-east of the port, in the south-east of Sangarea bay.

Wireless. The wireless station is about 300 yards south-west of the causeway, to the left of the road leading to Government House.

Cable. There is cable communication with Dakar, Freetown, and Monrovia. The cable station is in the Corniche Boulevard, and cables are landed on the south side of Tumbo.

Shipping. In normal times the following shipping lines call regularly: Chargeurs Réunis, Elder Dempster, Fabre, Fraissinet, Holland

West Afrika, Lesage, Libera Triestina, Société Navale de l'Ouest, Transports Maritimes de l'A.O.F., and Woermann. There is a steamer service twice a week to the Los islands. A large fleet of ketches is engaged in the palm-kernel trade.

BENTY ($9^{\circ} 10'$; $13^{\circ} 14'$ W.). Population, *c.* 500. Custom-house. Agricultural experimental station.

Benty, a settlement with a wharf and several godowns, stands on the south bank of the Mellacorée about 10 miles from the sea. There is anchorage above the wharf and off the south bank of the river, which is very steep, for vessels up to 410 feet in length and of 15 feet draught.

The agricultural experimental station takes the form of a coconut plantation.

Ground-nuts are exported.

Communications

Road. The only road out of Benty is a very poor one to Pamelap (20 miles).

11. MINERALS

THE only mineral of economic importance is the gold found near Siguiri. Mining is done almost entirely by natives, and it has been fully described in Volume I, pp. 288–289.

12. AGRICULTURE

THE greater part of the colony lies in the manioc zone, but the wide differences in climate between the coast, the highlands, and the interior plains result in a large variety of crops. To-day the most important of these is the banana, and the increasing cultivation of this fruit is a sign of the gradual change from a subsistence to a money economy.

Food Crops

Bananas. Until the advent of the European the banana was grown solely for food, the most popular variety being the plantain (*Musa sapientum* var. *paradisiaca*). This originated in tropical Asia and was probably introduced through Egypt many years ago. In 1898 the Chinese species of banana (*M. nana*) was introduced from the Canary islands to Camayenne, the experimental plantation near

Conakry; and the plantation evolved the variety *camayenne*, which is now exported. Growing bananas is the chief industry in the provinces of Conakry, Kindia, and Mamou, and in 1938 these provinces supplied over 80 per cent. of the Federation's export of bananas. Nearly all the plantations are owned by Europeans, and in 1934, out of the total of 3,954 acres under cultivation, only 370 acres were in the hands of native growers. This is due mainly to the laziness of the natives, who are unwilling to adopt the best methods of production (Vol. I, p. 310) or to take the trouble necessary to the packing and dispatch of the fruit. The actual growth of the trees is quick and the amount of space needed is small. The bunches of fruit used to be packed in cases or in bulk; now they are packed individually, rolled in paper and straw, and have wads of paper stuffed between the fruit. Shipment takes place as soon as possible, by lorry from the plantation to the nearest station, and thence by rail to Conakry. The banana ships have refrigerated holds, and they generally discharge at Nantes. The French Government imposes a heavy duty on foreign bananas so as to create a ready market for those grown in their own colonies. No production figures are available, but the steady growth of the industry is shown by the following export figures:

1917	.	.	.	.	.	.	.	194 tons
1922	.	.	.	.	.	.	.	660 „
1927	.	.	.	.	.	.	.	2,993 „
1932	.	.	.	.	.	.	.	16,527 „
1938	.	.	.	.	.	.	.	52,027 „

In 1936 some 4,000 acres were under cultivation and the banana almost rivalled gold as the chief export, the former representing 36 per cent. and the latter 40 per cent. of the total value.

Citrus Fruits. There is a growing citrus-fruit industry in the highlands, and its by-products, citric acid and orange essence, are important. The most important species is the lime (*Citrus aurantifolia*). If properly cultivated, it gives more fruit and a higher content of citric acid than in the West Indies. Sweet oranges (*C. sinensis*) are also an important crop, more for the essence from the rind than for the fruit itself. Production has more than doubled in the last fifteen years, and now nearly 200 tons of essence are exported annually. As 1,000 oranges yield only about 2 lb. of essence, this means a crop of more than 200,000,000 oranges. The fruit, which was formerly thrown away, is now made into jam or alcohol.

Pineapples and Mangos. Pineapples (*Ananas comosus*) are widely grown in the foothills of Fouta Jalon. The mango (*Mangifera indica*)

is often grown as a shade tree, but little has been done to improve the fruit.

Rice. It is only comparatively recently that rice (*Oryza sativa*) has been recognized as an important food crop and as one easy to grow. Physical conditions dictate the two chief methods of cultivation (Vol. I, pp. 316-317). 'Swamp' rice is grown in areas which flood during the rains, in river valleys, and where mangrove forest has been cleared. To enrich the soil the trees are usually burnt where they are felled. The ground is prepared in the dry season and during the rains the growing rice stands continuously in water, the seedlings having been transplanted from sandy soil. 'Hill' rice is cultivated on the slopes of Fouta Jalon. It grows, often with other crops, in light soil that does not need to be flooded. Numerous intermediate and half-wild varieties are grown by the natives. The grain is brittle, red-skinned, and unsuitable for export, but it provides a staple food locally. Details of production for 1935-1938 are as follows:

	1935-6	1936-7	1937-8
Acres under cultivation . . .	696,842	741,300	847,613
Yield in tons of total acreage . . .	147,730	177,157	2,023,530
Yield in tons per acre . . .	0.2	0.24	0.24

Kola. Owing to foreign demands for 'caffeine, kola cultivation is increasing fast, especially in the Guinea Highlands, and in 1937 there were more than 8,000,000 trees in 494,200 acres of this colony and of the Ivory Coast. *Cola nitida* is the species most suited to French Guinea and the export trade, but *C. acuminata* is also grown, though in much smaller quantity. The trees grow to a height of about 50 feet and should be planted 30 feet apart. They are slow to mature and do not produce a commercial crop for ten years or more. Bananas and plantains are often grown as shade trees. The nuts, which weigh up to 22 lb., grow near the ends of the branches and there may be 1,000 on a good tree. They have to be harvested by hand. This often proves an unpleasant job, for the leaves are frequently infested by red weaver ants which bite mercilessly and are only partly deterred by a smear of wood ash. Inside the nut is a white pulpy coat which encloses the red or white seeds. The white seeds command a higher price, for they are less common, are sweeter, and contain more caffeine. There is a considerable demand for kola in the interior of the neighbouring colonies. As the seeds do not keep well, they are carried in large baskets as rapidly as possible, and are damped and repacked in fresh leaves several times on a long journey. For export overseas the seeds are dried. These are the kola nuts of commerce

which are powdered and used, chiefly in America, for the now popular coca-cola and kola champagne. The powder is also used medicinally, owing to its caffeine and theobromine content. Natives of many tropical lands, including southern Asia, use it as a stimulant.

Sesame (Benniseed). This plant (*Sesamum indicum*) grows best in sandy loam and flowers during the dry weather. The seeds provide a valuable substitute for olive oil of a higher grade oil than that of ground-nuts. In several European countries it is compulsory in the manufacture of margarine. The cake is fed to cattle and the leaves are used in soup.

Coffee. The two kinds of coffee best suited to the colony are *Coffea robusta* and *C. stenophylla*. They grow wild or in cultivation, the former species being cultivated near the Nunez. *Stenophylla* or 'highland' coffee is grown in the interior, up to 2,000 feet, where there is a good rainfall.

Other Useful Crops

Oil Palm. The colony comes next to Dahomey in the production of palm kernels and palm oil. It produces, however, less than half the tonnage of kernels and a bare fraction of the oil of the smaller colony.

Rubber. The Brazilian species (*Funtumia hevea*) recently superseded the native tree (*F. elastica*) to meet foreign demand. The natives are not, however, interested in rubber cultivation, and, although premiums are paid to encourage production, the yield is small. Less than 2,000 tons were produced in 1937.

Manioc, millet, ground-nuts, maize, cotton, tobacco, indigo, and pepper are grown on a small scale.

Livestock

Cattle. Cattle are the only livestock of importance and are mainly kept by Fulani. The indigenous, humpless N'Dama, which is the only breed in the colony, originated in Gaoual province. The cattle are small, but strong and practically immune to the tsetse-fly. They average about 3 ft. 6 in. in height and are sometimes hornless. They are raised for their meat, which is of good quality by tropical standards. The cows give only about 3 pints of milk a day.

In 1938 a census revealed a total of 456,462 head of cattle, an increase of 5 per cent. over 1937. These were distributed mainly in the provinces of Labé (102,622), Mamou (68,855), Gaoual (56,889), and

Kindia (52,130). In the last-named province, however, this represents a decrease of 8 per cent. due to export to Sierra Leone (p. 154).

Strict preventive measures are now taken throughout the colony against plague, pleuro-pneumonia, and anthrax.

Sheep and Goats. These are found almost entirely in Fouta Jalon and the Guinea Highlands. In 1938 out of a total of 87,905 sheep and 127,726 goats, 21,119 sheep and 54,235 goats were in Labé province. The average weight of a sheep is only about 65 lb., the exception being those that are fattened for religious festivals.

Horses, Donkeys, and Pigs. These are comparatively few and are brought in from French Sudan. The figures for 1938 were 1,618 horses, 579 donkeys, and 2,318 pigs.

Bees. The native is a keen bee-keeper, although his methods are somewhat primitive. He makes cylindrical hives of bark or conical hives of plaited straw. These he places high up in trees, in March or April, when the locust bean is in flower. To take the honey, he lights a fire under the hive. If the queen is not burnt, the bees re-swarm in an empty hive placed ready in a near-by tree. The honey is extracted from the comb by hand-pressing or by wringing it out of a cloth. The natives use it to make a drink and to sweeten their bread and biscuits, particularly during Ramadan, the Moslem month of fasting. It is sold at 20–25 francs a quart. It is produced mainly in the provinces of Boke, Dabola, and Kankan, and in the Faranah district and in Fouta Jalon. Some honey is exported, but the native methods of extraction make it unsuitable for European use, except in the manufacture of alcohol. The wax is used for polish and blacking and fetches 3–5 francs per lb. In 1938 improved methods were introduced, with good results, in Dinguiraye and elsewhere. The natives are being encouraged to pack the honey and wax in clean containers. For export the percentage of impurities has been limited to 5 per cent. in the honey and 9 per cent. in the wax.

Experimental Stations

There are experimental stations at Benty, Camayenne, Kankan, Kébalé (11½ miles north-east of Katia), Kindia, Kissidougou, Sébouri (3 miles north-west of Dalaba), and Tolo. Coffee is the principal plant at Kébalé, Kissidougou, and Sébouri; cotton at Kankan; bananas and rice at Kindia; oranges at Tolo; and rubber at Camayenne. At Fotoba on Tamara island there is an experimental farm.

13. COMMERCE AND FINANCE

COMMERCE

History. The Anglo-French Convention of 1882 (p. 126), although never ratified, made it clear that British political influence would not extend north of the Mellacorée. British economic influence, on the other hand, was supreme, and Freetown was, in effect, the principal port of the Rivières du Sud. The position of French traders steadily worsened during the ensuing decade. The small direct export trade was confined to stations on the estuaries of the Konkoure, the Pongo, the Nunez, and the Mellacorée. In 1889 these four stations collected only 255,000 francs (c. £10,000) in customs duties, the one on the Konkoure contributing 99,000 francs. At this place three-quarters of the trading firms were British. English money was almost universal, and French money, which was only used to pay duties, was at a discount of 3 per cent.

In order to maintain this advantageous position, the Government of Sierra Leone abolished export duties and the harbour dues of 10s. per ton. The import duty on spirits was also lowered in the hope of attracting up-country trade. At the same time, sites on the Los islands were let to merchants at low rates. Several Sierra Leone firms took advantage of this policy to establish branches, and another British house opened on the Pongo.

The first French step to meet the competition from Freetown was to focus all the local trade on to Conakry. This was done by political influence, by the construction of roads, by improved harbour facilities, and by the lowering of dues. The natives of Dabreka complained of the measures taken to divert trade to Conakry, and invoked an ancient custom which forbade strangers to approach Tumbo island (which is a peninsula except at high tide) by land. Nevertheless, the value of the gum export of Dabreka fell from 57,000 francs in the second quarter of 1893 to 31,000 francs in the same period of 1894, and that of Koyah from 19,000 francs to 10,000 francs. The trade at these two little places received a death-blow, and Conakry became the sole port of the colony.

Thus freed from domestic competition, Conakry took up the struggle with Freetown. Until 1896 no less than 80 per cent. of the imports to French Guinea entered through Sierra Leone and 60 per cent. of its exports went out by the same route. In 1897, however, at the request of the Government of French Guinea, the French

Government consented to impose a surtax on all imports into the colony that did not come directly from their countries of origin. This had an immediate effect, and by 1899 Freetown's share in the imports of French Guinea had dropped to 4 per cent. In 1895 only 1,578 ships of all classes, with a total tonnage of 120,000, had entered Conakry; but in 1899 there were 5,072 entries totalling 312,000 tons. Overland trade between French Guinea and Sierra Leone also dropped by half. Business enterprises hastened to set up at Conakry, currency was plentiful, and caravans from the interior forgot their superstitious fears of Tumbo island. By 1899 twenty-two first-class firms and many others of lesser rank were established. These were in addition to those owned by Syrians, Italians, Spaniards, and natives of Sierra Leone.

The following figures show that by the end of the century French Guinea had thrown off its long dependence on Sierra Leone:

		1896	1899	1902
			<i>Imports</i>	
French Guinea	. . . . .	£192,000	£618,000	£455,000
Sierra Leone	. . . . .	£504,000	£690,000	£627,000
			<i>Exports</i>	
French Guinea	. . . . .	£231,000	£378,000	£332,000
Sierra Leone	. . . . .	£458,000	£361,000	£403,000

The Balance of Trade. In 1938 both the value and the weight of the imports were less than half those of the exports, for 157,806 tons of goods worth 360,391,000 francs were exported and 59,830 tons worth 178,099,000 francs imported. These figures account for almost 11 per cent. by weight of the whole *Commerce Spécial* and for just over 11 per cent. by value.

Firms. The following firms have branches in almost all the principal towns of the colony: the Compagnie Française de l'Afrique Occidentale, the Société Commerciale de l'Ouest Africain, Charles Peyrissac et Cie., the Compagnie du Niger Français, and Paterson, Zochonis, & Co. The firms of Habib, Kalil, Mansour, and Turki are found in inland towns only.

Exports. The most valuable export is gold, and in 1937 7,883 lb. Troy were exported to the value of 88,274,662 francs. This formed eight-elevenths of the total export of gold from the Federation. The second most valuable export is bananas: 46,034 tons of these worth 44,415,795 francs were exported in 1937, and in the following year the weight rose to 52,027 tons. This is more than double the total for 1933, and represents a striking increase. The only other product

of major importance is palm kernels, 18,956 tons of which to the value of 18,280,979 francs were exported in 1937. Rubber exports were quadrupled between 1935 and 1937, but, even so, in the latter year they only amounted to 1,376 tons.

Orange essence has grown in importance in recent years, and on 15 March 1939 its sale was regulated by an order. This provided that orange essence should only be measured for sale by cylindrical glass containers graduated in thousands of cubic centimetres. It further provided that the essence was not to be stored or moved in tin-plate receptacles, especially those which had been previously used for petrol or for oil. The legal period for trade in orange essence was to be fixed each year, and on the last day of such a period unsold stocks were to be placed in sealed casks, each marked with the year of production in clear and indelible figures.

Imports. The chief import, as in most colonies, is cotton cloths. These are mostly in short pieces, as the long guinées of the north, despite their etymological connexion, are not worn in French Guinea. In 1937, 1,504 tons of cotton cloths were imported to the value of 47,049,478 francs, more than a quarter of the total of that of the imports. The second most valuable import is metal goods, machines, and machinery. No figures for weight are issued for most of these, but the value in 1937 was 23,695,350 francs. Considerable quantities of sugar, wheat flour, motor vehicles and tyres, oil fuel, coal, and building materials are also imported annually. The figures for these and for other principal imports are given in Appendix B. Most of them obviously supply the demand for the manufactured goods, the European foodstuffs, and the fuel which the colony itself is totally unable to provide.

Livestock. There is a fairly important trade, both internal and external, in livestock, and large monthly markets are held at Kindia, Mamou, Bissikrima, and Labé. Broadly speaking, the eastern slopes of Fouta Jalon supply Upper Guinea and the Siguiri district, the western slopes the rest of the colony. From Kindia beasts are sent both to Conakry and to Sierra Leone; Mamou has the advantage of being on the railway; and at Bissikrima there is a huge shed with ample facilities for watering and feeding the animals. At Madina, 4 miles from Conakry, there are cattle-pens, built by the local Native Provident Society, which act as a point of assembly for those beasts destined to be sold in Conakry. In 1937 there were 1,785 head of cattle and 847 head of sheep, and in 1938 the figures were 2,549 and 1,663 respectively; in this way the town's supply of fresh meat was

assured. The weekly market at Beyla supplies the provinces of Macenta and of N'Zérékoré and also Liberia. In 1937, 1,600 head of cattle were sold here, but in 1938 the number fell to 729, 413 of which went to Liberia. This was due to a ban on the movement of cattle imposed owing to cattle plague in Macenta.

The export of livestock to Sierra Leone and to Liberia in 1938 showed a 50 per cent. increase over the figures for 1937, but exports to Senegal and to Portuguese Guinea declined. The reason for this was the high prices paid in Sierra Leone. A cow that sold for 500 francs in French Guinea itself fetched £8 (1,400 francs) in Sierra Leone, and a sheep £2 10s. Official returns gave the following numbers of beasts crossing the frontier in 1938: 9 horses, 2,604 cattle, 5,629 sheep, and 2,563 goats. It was known, however, that many animals were smuggled across the border at places where there were no custom posts. An order of 25 August 1938 forbade the export of bullocks under 5 years of age and of cows under 12 years.

The gold-miners of the Siguiri district require more meat than can be locally supplied, and numbers of animals are imported from French Sudan. In 1937, 1,815 head of cattle and 13,463 head of sheep and goats were registered there, and in 1938 2,138 head of cattle and 19,331 head of sheep and goats.

FINANCE

The budget for 1938 balanced at 61,647,000 francs (£378,202), and the official details were as follows:

<i>Revenue</i>		<i>Francs</i>
I. Ordinary Revenue		
Direct taxes		36,128,000
Customs and excise		9,249,000
Posts, telegraphs, &c.		3,261,000
Grants and subsidies		8,332,000
Revenue from previous financial years		100,000
II. Extraordinary Revenue		
Sundry receipts		869,000
Previous withdrawals from the Reserve Bank		3,708,000
TOTAL		<u>61,647,000</u>
<i>Expenditure</i>		<i>Francs</i>
I. Ordinary Expenditure		
Debt charges		138,000
Salaries of administrative staffs		15,818,000

Other administrative charges	3,509,000
Posts, telegraphs, &c. (salaries and wages)	9,025,000
Posts, telegraphs, &c. (other expenditure)	5,263,000
Public works (maintenance and construction)	4,739,000
Social and economic departments (salaries)	6,946,000
Social and economic departments (other expenditure)	5,580,000
Sundry disbursements.	4,997,000
Secret funds	5,000
Unforeseen expenses	50,000
Expenditure under the special programme	1,000,000
II. Extraordinary Expenditure	
Extraordinary expenditure	4,577,000
TOTAL	<u>61,647,000</u>

The 'special programme' of the last item of the Ordinary Expenditure shares the obscurity of the Extraordinary Expenditure so far as details are concerned: none are published. Apart from this, there is no cause for comment.

14. COMMUNICATIONS

RAILWAYS

THE only railway in the colony is that from Conakry to Kankan.

History

A railway in this part of French West Africa was first projected by Faidherbe in the seventies, but little was done until 1889. In that year a reconnaissance was made, and several routes were subsequently suggested. It was ultimately agreed that the best was from Conakry through the recently pacified region of Fouta Jalon to the Niger. This route would serve the double purpose of tapping the resources of the interior of the colony and of preventing the British from doing so through Sierra Leone.

Work began in July 1900. In the November of that year the contracting company recruited 6,000 workmen locally, but three months later only 1,000 remained. Toucouleur were then imported from Senegal; but these also deserted, and the company had to surrender its contract to the Government after 22 months. Forced labour was then employed, principally that of Mandingos, Bambaras, and Sous-sou. On 29 May 1904 the first section of 92 miles was opened and the new town of Kindia was built at its far end. Railhead reached

Sougouéta in 1906, Mamou in 1908, and Kouroussa in 1910. The final section to Kankan was opened on 15 August 1914.

All this represented a considerable feat of engineering. In 14 years 410 miles of railway were built over some of the roughest country in West Africa. Deep ravines, forested mountains, and swift rivers were crossed, with variations in altitude from 33 feet to 2,346 feet. In some parts blasting was necessary. The whole project reflects the greatest credit on those responsible for its execution.

The cost was 67,600,000 francs (£2,680,000) or 164,900 francs per mile.

In spite of its constructional merits, the railway has not lacked its critics. It has been said that the commerce of the upper Niger is negligible, that routes for its movement previously existed, and that the railway's route was taken through unnecessarily difficult country. As a result of the last, speeds are so low and running costs so high that the line can never pay its way.

Its apologists, on the other hand, maintain that the line was not intended to secure immediate profits or to serve purely local requirements. It was rather conceived as a line of penetration, designed to populate empty districts and to develop poor ones. Its benefits are more strategic and administrative than commercial. By it troops can be moved and officials spared the necessity of toilsome journeys. Furthermore, it has proved a blessing to the local economy. The slow, inefficient, and wasteful method of head portage has been largely abolished, and it is estimated that this has freed 150,000 men for productive work. Banana plantations have been developed, European goods taken to the heart of the colony, and native diet made more varied. The scenic beauties of Fouta Jalon have also been revealed, and, before 1939, were beginning to attract tourists.

Whatever the strength of these arguments may be, the facts remain that the railway is there and that it is doing a steady trade.

Extensions. Numerous plans for branch lines and for extensions have been put forward during the past forty years. The most promising of them appears to be an eastward prolongation from Kankan to Bobo Dioulasso and Ouagadougou, and the necessary bridge across the Milo was completed in September 1943.

Permanent Way, Locomotives, and Rolling-stock

Permanent Way. The line is metre-gauge. Rails are flat-bottomed with an average length of 26 feet and weigh 51 lb. per yard (25.5 kg. per metre). Sleepers are of steel, weigh 88 lb. (40 kg.) each, and are

so shaped as to incline the rails inward. There are 10 of them per rail length, and the total weight of rails, fastenings, and sleepers is 63 tons per mile (103 metric tons per km.). Laterite is the commonest ballast.

Gradients and Curvature. No gradient exceeds 1:40 or extends for more than half a mile without a level stretch.

Bridges and Buildings. Important bridges are described in the itinerary. Others are of steel or concrete. Most station buildings have a single storey and a veranda.

Locomotives. The following locomotives were in service in 1939:

<i>Wheel arrangement and type</i>	<i>Makers</i>	<i>Unloaded weight in tons</i>	<i>Number</i>
4-6-6-4 Mallet compound	Batignolles	46	17
0-6-0	Weidknecht	26½	9
0-6-0	Corpet-Louvet	25½	4
4-6-0	Cail	28½	4
0-6-0	Corpet-Louvet	17	5
?	Cail	32	11
			Total 50

Carriages and Wagons. In 1939 there were 36 passenger coaches and 526 wagons of all types. No figures are published regarding their capacity.

Service. Passenger trains left Conakry each Tuesday and Friday at 6.30 a.m. They arrived at Mamou at 5.38 p.m., left there the following mornings at 6.20 a.m., and reached Kouroussa at 3.16 p.m. and Kankan at 5.32 p.m. Return trains left Kankan on Tuesdays and Fridays at 6.00 a.m. and arrived at Conakry on Wednesdays and Saturdays at 5.25 p.m.

Traffic

Traffic figures for 1937 and 1938 were as follows:

	1937	1938
Passengers	228,823	284,486
Passenger miles	13,972,518	17,914,959
Freight in tons	187,943	134,915
Ton miles	17,092,613	17,221,605
Revenue	£126,853	£115,589

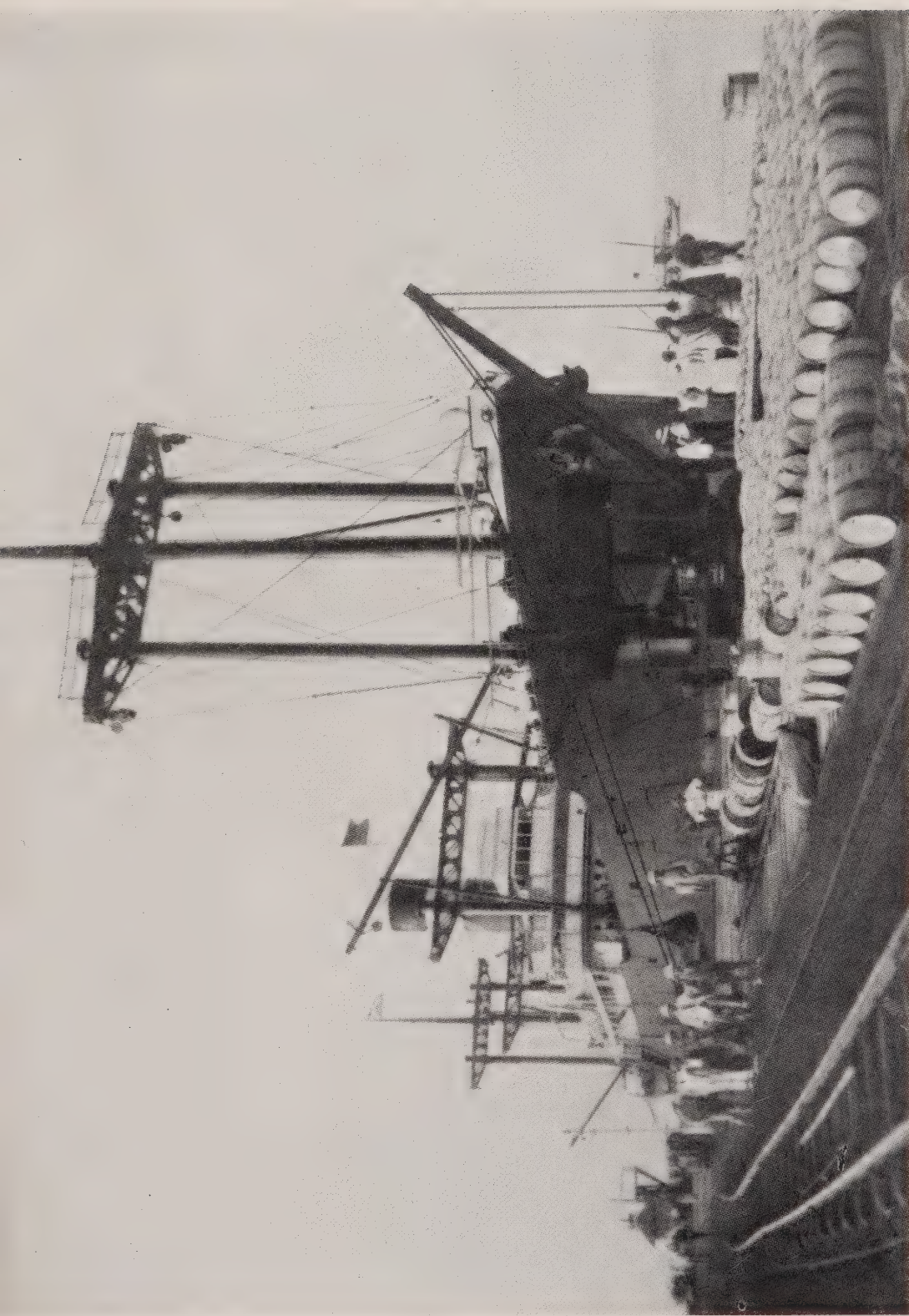
The principal item of freight was bananas, the respective figures being 46,342 tons and 44,874 tons.

<i>Distance from Conakry</i>		<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	33	CONAKRY	The harbour branch (1,100 m., 1,200 yards) joins the main line from the north-west.
16	10	328	SIMBAÏA	There are workshops, an engine shed, a turntable (25 tons), and a goods shed with a central track. The line crosses by a sand and laterite embankment the creek that separates Tumbo island from the mainland. It then runs north-east along the ridge of firm ground that divides the marshes of the Dabreka estuary from those of the Soumbouya. The soil is laterite, gravel, and sand, and the vegetation is open savanna.
33	20½	..	DABREKA	The station is south of the town, a distance of 7 miles by road.
40	25	371	..	The Lamékouré ravine is crossed by a steel bridge of 3 spans, each of 66 feet, on masonry piers 49 feet high.
42	26	426	KAKOULIMA	Almost continuous heavy earthworks carry the line along the south flank of Mt. Kakoulima. It then rises to Kouria, after which it uses the valley of the Consirah, keeping to the right bank of the river and frequently changing direction.
51	32	528	KOURIA	
78	48½	..	TABILI	The station at Tabili is 1 mile north-north-west of the village. The line turns almost due north, and then north-east to cross the Nikha river by a bridge of 2 spans, one of 66 feet and the other of 49 feet. A similar bridge is used to span the
90	56	223	..	
102	63	354	..	

<i>Distance from Conakry</i>		<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
108	67	..	GRANDES CHUTES	Samou river. Embankments and rock cuttings are numerous, as the country is very hilly, and before Grandes Chutes there is a large U-shaped bend.
122	76	..	..	The Doukea ravine is crossed by a curved bridge with a radius of 394 feet. This has 4 steel spans of 66 feet with an arch of 16 feet at each end. The spans are 78 feet above the water.
131	81	1,253	..	From this the line climbs for 5 miles to drop again to Friguiagbe. It turns due east and then north-east to ascend to Kindia. Here there are workshops, an engine shed, a turntable, and a goods shed. The station is to the east of the town.
134	83	..	FRIGUIAGBE	
148	92	1,378	KINDIA	
166	103	..	TABOUNA	
177	110	..	FOLATA (FOFOTA)	
199	123½	..	..	The line descends rapidly by a series of sharp curves and zigzags round the sides of hills, and follows the Koumigné valley in a roughly eastwards direction. The Kolenté river is crossed by a bridge, and the line curves north-west to the station of the same name. More zigzags occur round the flanks of Mt. Souti and of other mountains. The Konkoure is reached 1 mile beyond Linsan, and its valley is used for more than 20 miles. The railway is on the right bank save for two bridges, respectively at 251 km. (156 miles) and at Kouraïa-Konkoure.
200	124	295	KOLENTÉ	
219	136	..	SOUGOUÉTA	
242	150	..	LINSAN	
251	156	..	..
269	167	1,476	KOURAÏA-KONKOURS	

The Konkoure valley is

<i>Distance from Conakry</i>		<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
295	183	2,329	MAMOU	left and the line ascends steeply before descending to Mamou. Here there are workshops, an engine shed, a turntable, and a goods shed. Most trains stop here overnight.
301	187	..	COUMI	..
307	191	2,346	..	There is another incline, rather less steep, up to the Col de Coumi, the highest point of the whole route. After this the line drops down into the valley of the Bafing, which is followed until 6½ miles north-east of Beauvois. The latter is the station for Timbo, to which it is connected by a poor track.
334	207½	..	BALLAY	
342	212½	..	BEAUVOIS	
353	219	2,074	..	
368	229	2,156	PÉRINET	
372	231	2,270	..	The last steep hill comes just after Périnet. Henceforward easy gradients are the rule.
397	247	2,067	SIFFRAY	The line gradually curves eastwards and south-eastwards. Five miles before Dafila it crosses the watershed between the upper streams of the Bafing and those of the Tinkisso. It and the road run below the south face of the Oursa massif and approach Dabola from the south-west. The railway continues in the company of the road, both running roughly parallel to the left bank of the river, as far as Bissikrima.
412	256	..	..
420	261	1,805	DAFILA	
442	275	1,430	DABOLA	
465	289	1,386	BISSIKRIMA	
487	302½	1,371	NIÉMÉ	The Tinkisso is crossed by a bridge with 2 spans, each of 82 feet, and the line strikes east away from the river. Long straight stretches of track
500	311	1,411	CISELA	



35. Conakry: ship alongside the Government Wharf



36. *The ferry across the Milo at Kankan*



37. *The ferry across the Niger at Kouroussa*

<i>Distance from Conakry</i>		<i>Eleva- tion in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
501.5	312	are characteristic of this section, and the general direction is a little south of east. One mile beyond Cisela a tributary of the Niémé is crossed, and at Saréya the Banié. The line continues over slightly undulating country until Kouroussa is reached. Here there are workshops and an engine shed.
526	327	..	SARÉYA	
537	334	1,266	SANACIA (halt)	
556	345	..	TAMBA	
589	366	1,250	KOUROUSSA	
608	378	1,196	..	The Niger and its tributary the Niandan are both crossed by bridges, the latter close to a saw-mill and 2 miles before Baro station. The country still rises and falls gently. Between Léfarani and Kankan there are seven level crossings with the road. The terminus is close to the Milo, and has an engine shed.
611	380	..	BARO	
635	394½	..	LÉFARANI	
660	410	1,214	KANKAN	

Note. Water is available at all stations.

ROADS

Intercolonial

Fig. 10 shows two main intercolonial roads. One runs from Conakry north-eastwards to Bamako, and the other from the Senegalese border near Youkounkoun to the Ivory Coast border near Man. Between Mamou and Dabola they have a common section. This is the only road through the centre of the colony and is the principal link in the chain of routes. There is also an intercolonial road from Koyah to Pamelap. The total length of all these three is 1,258 miles (2,025 km.).

Itineraries. To some extent the first part of the route from Conakry duplicates the railway. Its general direction is north-east. It first runs along the ridge to Koyah (31 miles), the decayed port on the Sarinka, which is more than 4 miles from the railway. The latter is soon

rejoined, however, and the road accompanies it to Tabili (49 miles). From this place the two remain apart until almost as far as Kindia. The road twists through some very rough country with difficult gradients to reach Friguiagbe (84 miles) and Kindia (96 miles). For the next 40 miles it makes a sort of lattice pattern with the railway, alternately touching it and diverging from it. The two come together just before Maléa (124 miles), at Sougouéta (133 miles), and at 156 miles. From here the two run side by side, first going up the Konkoure valley, then over the watershed, and finally down to Mamou (181 miles). The road remains near the railway for a further few miles, but then bears north a little to Timbo (221 miles). The Bafing is crossed by a ferry at 226½ miles, and the road goes alongside the railway to Dabola (295 miles) and Bissikrima (310 miles). The hill country is now over, but the road runs for several miles down the left bank of the Tinkisso to cross it at Youmanea (325 miles). The way now lies along gently rolling country to Kouroussa (397 miles), where the railway is finally abandoned. The road keeps along the left bank of the Niger and is rarely far from the actual river. The colonial road to Kankan branches off at Komadou (413 miles), and another road from Kankan comes in at Niandan-Koro (465 miles). Siguiri (492 miles) is the last town of importance in the colony, and the border of French Sudan is reached 31 miles beyond it.

The second road crosses from Tambacounda in Senegal. At Tabadel (36 miles) there is a by-road to Youkounkoun, 14 miles to the east, and at Doumou (52 miles) there is another one. This goes north to Youkounkoun, now 26 miles distant. The turn for Gaoual and Koumbia, respectively 13 miles and 41 miles west, is at Guéra (91 miles). Shortly afterwards the road turns east, climbs 1,200 feet in the 1 mile before Sita (127 miles), and follows an extremely sinuous course to Labé (180 miles). It then resumes its southerly direction. At 232 miles there is a turn for Dalaba, 1 mile to the north-east, and the other main road is joined 2½ miles north of Mamou (267 miles). At Dabola (381 miles) it resumes its independent existence and turns south-south-east to Diabakagna (396 miles). The Niger is crossed by a ferry at Balandougou (430 miles) and approached very closely at Faranah (448 miles) and at Tiro (478 miles). From here the road takes a more south-easterly course to Kissidougou (547 miles). It then goes south to Guékédou (606 miles) and turns sharply east to Macenta (670 miles), running roughly parallel to the Liberian frontier. It turns south-east over the north shoulder of the Gnali massif to N'Zérékoré (753 miles), east-north-east to Lola (787

miles), and south-east again to N'Zo (810 miles) and the border of the Ivory Coast (821 miles).

The third road leaves the first at Koyah (31 miles from Conakry), and continues curving eastwards and south-eastwards to Forecaria (64 miles). There is a ferry across the Mellacorée (75 miles) just before Farmoreah ($76\frac{1}{2}$ miles). The road runs on to Pamelap ($84\frac{1}{2}$ miles), only half a mile from the frontier of Sierra Leone, beyond which a rough track connects with the road system of that colony.

Colonial

There are 1,167 miles (1,878 km.) of colonial roads. This figure excludes tracks, but includes some roads, particularly in the western half of the colony, which are not motorable in bad weather. Kankan is the principal centre, with routes radiating to Niandan-Koro, to Kouroussa, to Kissidougou, to Macenta and Touba (Ivory Coast), and to Bougouni (French Sudan) and Odienné (Ivory Coast). Labé is a focal point for routes from Mali, Tougue, and Téliimélé. There is also a road near the coast connecting Conakry with Boffa and Boke.

Itineraries. Two routes deserve more detailed notice. One is from Kouroussa via Kankan eastwards to French Sudan and the Ivory Coast, and the other from Niandan-Koro via Kankan southwards to Kerouane and the Ivory Coast near Man. The former leaves the intercolonial road at Komadou, 16 miles from Kouroussa. Unlike the railway, the road avoids crossing the Niandan as well as the Niger, but vehicles go over the main stream by a ferry which can carry up to 4 tons. The road then proceeds south-east to join the railway. Between Léfarani (37 miles) and Kankan (56 miles) there are seven level crossings. The latter place is the railway terminus. The Milo is crossed by a temporary wooden bridge when the water is low, but during the flood season a steel pontoon ferry is used. The road curves south-east and then north-east to Mandiana (108 miles). One branch continues in the latter direction to Falama (117 miles) and the border of French Sudan (152 miles) shortly before Bougouni. The other goes south and east to the border of the Ivory Coast (190 miles) and to Odienné.

The second road goes south from Niandan-Koro to Kankan (55 miles), and then on to Bissandougou (21 miles), Kerouane (144 miles), and Konsankoro (158 miles). A branch goes south-west to Macenta, 54 miles away. The main road bears south-east to Beyla (205 miles) and to the border of the Ivory Coast (247 miles), not far short of Touba.

Bus Services

There are no regular bus services.

SIGNALS

Cables

Conakry is connected by cable to Dakar, Freetown, and Monrovia. In 1939 to send a message to France cost 19·30 francs (2s. 2d.) a word.

Telegraphs

Telegraph lines run alongside the railway and also along the following sections of main road:

Bissikrima–Dinguiraye
 Conakry–Dabreka
 Conakry–Pamelap
 Dabola–Kissidougou

TABLE V. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short.</i>	<i>Power in Kilowatts</i>	<i>Owner and remarks</i>
Boke . . .	10° 56' N. 14° 18' W.	3 short	0·1	Aeronautical station.
Conakry . . .	9° 31' N. 13° 43' W.	4 medium 7 short	0·5 0·25	Coast and commercial stations, communicating with regular steamers. Interior service.
Conakry Aéradio	9° 31' N. 13° 43' W.	1 medium 4 short	0·5 0·25	Aeronautical station.
Guékédou . . .	8° 32' N. 10° 10' W.	3 short	0·01	Commercial station. Interior service.
Kankan . . .	10° 20' N. 9° 18' W.	5 short	0·1–0·5 0·1 0·075	Commercial and aeronautical station. Interior service.
Kindia . . .	10° 04' N. 12° 52' W.	2 short	Unknown	Commercial and military station.
Koumbia . . .	11° 48' N. 13° 30' W.	3 short	0·05	Commercial station. Interior service.
Labé . . .	11° 15' N. 12° 12' W.	3 short	0·05	Commercial station. Interior service.
Macenta . . .	8° 29' N. 9° 32' W.	3 short	0·05	Commercial station. Interior service.
Mali . . .	12° 07' N. 12° 18' W.	2 short	0·02	Commercial station. Interior service.
N'Zérékoré . . .	7° 48' N. 8° 48' W.	3 short	0·01 and unknown	Commercial station. Interior service.
Siguiri . . .	11° 26' N. 9° 08' W.	2 short	0·05	Commercial station. Interior service.



38. *Bridge over the Farmoreah at Dixinn*



39. *Conakry: the wireless station*



40. *The colonial road near Boffa*



41. *A liane bridge near Macenta*

Kankan-Beyla-border of the Ivory Coast
Kankan-Falama-border of French Sudan
Kindia-Télimélé
Konsankoro-Macenta
Labé-Guéra-border of Senegal
Labé-Mali.

The following lines run alongside by-roads or tracks:

Dabreka-Boke-Victoria
Kissidougou-Macenta
Siguiri-Kita-border of French Sudan
Télimélé-Koumbia-Gaoual-Guéra.

Wireless

There are stations at Boke, Conakry, Guékédou, Kankan, Kindia, Koumbia, Labé, Macenta, Mali, N'Zérékoré, and Siguiri. They are all of them of low power and none of them does any broadcasting. Details are given in Table V. In 1939 radiotelegrams to France cost 16.00 francs (1s. 10d.) a word.

Postal Services

Letters sent by air mail used to leave Toulouse on a Sunday and arrive at Conakry on the following day. Internal distribution of mail is not very good.

APPENDIX A

Changes in the Constitution

Before 1845 all French possessions in West Africa were directly subordinate to the Governor of Senegal.

1845, Dec. 8. The administration of the French establishments of Rivières du Sud and all other French establishments as far south as Gabon entrusted to the naval commander-in-chief with headquarters at Goree and rendered independent of Senegal.

1859, Feb. 26. Decree putting Goree and the Rivières du Sud again under the Governor of Senegal.

1882, Oct. 12. Decree organizing the establishments on the Rivières du Sud under a Lieutenant-Governor, subordinate to the Governor of Senegal.

1886, June 16 and Aug. 4. Decrees making Lieutenant-Governor of the Rivières du Sud responsible for the Ivory Coast and Dahomey.

- 1889, Aug. 1. Decree authorizing the Lieutenant-Governor to correspond direct with Paris, but compelling him to submit copies of correspondence on political matters to the Governor of Senegal, as being generally responsible for the French West African Colonies. A budget separate from that of Senegal to be instituted. The colony to receive its own staff headed by a Secretary-General and a Treasurer. The Lieutenant-General's residence to be fixed at Conakry, but he to visit twice annually the settlements to the south for which he remained responsible, reporting on them to the Governor and the Under-Secretary of State, and to be charged with the protectorate of Fouta Jalon.
- 1891, Dec. 17. Decree giving the colony of Rivières du Sud (still including the Ivory Coast and Dahomey) complete independence of Senegal under a governor.
- 1893, Mar. 10. Decree giving the colony the name of French Guinea. In the same year the Ivory Coast and Dahomey received independent governments.
- 1895, June 16. Decree constituting the Government of French West Africa under the Governor of Senegal as *ex officio* Governor-General. The constituent colonies, of which French Guinea was one, were under the general direction of the Governor-General but retained their own entities and fiscal systems, making contributions to the central government to a special section of the budget of Senegal. The Governor of French Guinea retained his title.
- 1902, Oct. 1. Decree separating the office of Governor-General from the Governorship of Senegal, and moving the capital of French West Africa from St. Louis to Dakar. The officers in charge of colonies (including Senegal) became Lieutenant-Governors.
- 1904, Oct. 18. Decree reconstituting the central government of French West Africa. It received its own budget, to which were appropriated all customs duties throughout the Federation. It provided for the *Service de la Dette* of all colonies, travelling inspection of colonies, contribution to France, French law throughout the Federation, and public works of common interest. The Federal Government took over the loans of the constituent colonies, and was enabled to receive financial contributions from their funds and to subsidize them out of its own funds. The constituent colonies retained their own budgets, taking all taxes not appropriated to the Federal Government, and providing all services not provided by it. Colonial Governments were, however, made subject to the general control of the Governor-General.
- 1937, June 14. Decree whereby Lieutenant-Governors of colonies became Governors.

APPENDIX B

Principal Imports and Exports

		1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
<i>Exports</i>							
Gold	lb. Troy	8,217	39,022,291	8,158	40,381,000	7,883	88,274,662
Bananas	tons	30,150 ¹	23,181,105	44,343	36,043,909	46,034	44,415,795
Palm kernels	"	11,057	6,137,427	10,164	7,850,751	18,956	18,280,979
Orange essence	"	207	1,714,429	232	3,473,330	206	3,919,291
Ground-nuts in shell	"	2,432	545,173	4,209	3,942,541	2,976	2,317,749
Rubber	"	347	706,498	472	981,709	1,376	2,876,102
Wax	"	411	2,029,820	290	1,369,977	278	1,569,974
Cattle hides	"	615	1,874,883	403	1,226,445	427	1,391,471
<i>Imports</i>							
Cotton cloths	tons	945	16,874,368	1,511	27,475,909	1,504	47,049,478
Sailcloth, tarpaulin, and sackcloth	"	392	995,947	493	1,122,390	753	2,763,812
Metal goods	"	..	4,991,059	..	7,458,257	..	15,087,039
Machines and machinery	"	..	1,244,788	..	2,186,319	..	4,512,821
Iron goods ²	tons	1,053	1,039,114	2,086	2,053,216	2,401	4,095,490
Motor vehicles	Nos.	187	2,577,651	315	4,700,598	225	4,666,063
Rice	tons	923	529,701	3,094	1,993,089	4,653	4,676,006
Wine	gallons	1,300	1,973,383	2,323	2,678,898	1,460	2,432,372
Sugar	tons	571	530,220	896	952,982	819	1,429,765
Wheat flour	"	2,013	1,257,540	2,355	1,821,729	1,008	1,817,929
Cigars and cigarettes	"	37	792,350	49	1,044,974	53	1,354,284
Oil fuel	"	2,821	2,258,708	3,526	2,498,113	3,884	4,780,103
Coal	"	6,971	1,105,817	9,787	2,118,987	9,880	1,892,346
Building materials	"	6,238	1,103,413	9,721	1,930,602	8,218	1,865,516
Paper and cardboard	"	1,071	1,504,323	88	409,404	185	858,115
Tyres	"	49	871,059	66	1,238,432	92	2,176,962
Sea and river craft	"	..	701,409	..	182,398	..	1,089,730

¹ 21,378 tons in 1933.² Including rails for railway lines.

CHAPTER IV

FRENCH SUDAN

I. GENERAL

Area: 591,122 square miles. Population (1937): 3,635,073. Density per square mile: 6.15. Capital: Bamako.

THIS vast colony, more than ten times the size of England and Wales, stretches from $25^{\circ} 53' \text{ N.}$ to $10^{\circ} 08' \text{ N.}$ and from $12^{\circ} 13' \text{ W.}$ to $4^{\circ} 17' \text{ E.}$ It has, therefore, an extreme length of some 1,060 miles and an extreme width of 950 miles. It is entirely cut off from the sea, and its boundaries, with the exception of that with Algeria, are all with neighbouring members of the Federation.

Boundaries. At $12^{\circ} 26' \text{ N.}, 11^{\circ} 23' \text{ W.}$ French Guinea, Senegal, and French Sudan meet. For some 130 miles northwards from that point the Falémé forms the boundary between the two latter colonies. The river flows to the west of the next 64 miles of boundary, but rejoins it for the last 30 miles before its own junction with the Senegal. The boundary, now with Mauritania, turns sharply east to follow the main river upstream for 16 miles. It then bears north-east and subsequently almost north up the Karakoro to a point $16^{\circ} 00' \text{ N.}$ and $11^{\circ} 29' \text{ W.}$ After going east by south for 10 miles and south-east for 32 miles, the boundary resumes its north-easterly course. It runs in a series of straight lines across the desert: north-east by east to the Tamchakett-Timebédra track, north-east by north to $17^{\circ} 44' \text{ N.}, 9^{\circ} 00' \text{ W.},$ and north-east to $18^{\circ} 00' \text{ N.}, 8^{\circ} 48' \text{ W.}$ After that it still maintains its north-easterly direction, but curves somewhat in places before it reaches $19^{\circ} 28' \text{ N.}, 8^{\circ} 00' \text{ W.}$ From this point the boundary runs in a straight line for 276 miles. It then goes due north across hammada for 190 miles to meet the boundary of Algeria at $25^{\circ} 53' \text{ N.}, 6^{\circ} 12' \text{ W.},$ the colony's northernmost point. Another straight line carries the interterritorial boundary for 565 miles south-east to the foothills of Adrar des Ifoghas, a mile beyond the Ligne de Tanezrouft. The boundary twists through the heart of Adrar des Ifoghas, maintaining a generally south-easterly direction until it reaches the In Akantarar. It follows this ouadi south for 78 miles, but then turns east-north-east to run in another straight line to $19^{\circ} 12' \text{ N.}, 4^{\circ} 16' \text{ E.}$ This is the meeting-point of Algeria, Niger, and French Sudan. The

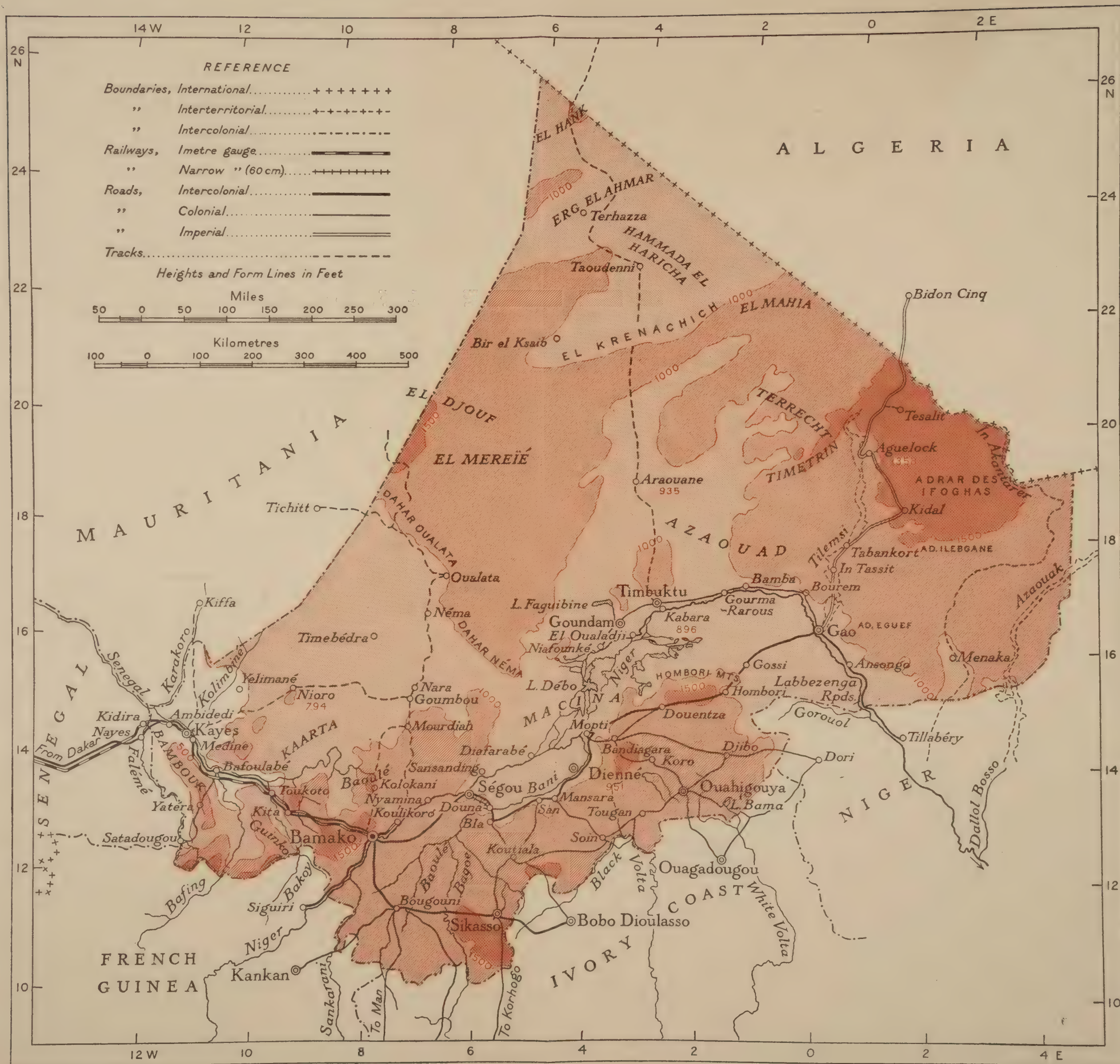


FIG. 19. *French Sudan*

intercolonial boundary then goes almost due south for 153 miles to $17^{\circ} 00' N.$, $4^{\circ} 17' E.$, but from here it takes a more irregular course to $15^{\circ} 20' N.$, $3^{\circ} 18' E.$ It then bends sharply west to run a little south of west and to cross the Niger just below the Labbezenga rapids. Still running approximately west, the boundary crosses the prime meridian at $15^{\circ} 03' N.$ From this point it is constantly changing direction to conform with local administrative requirements and it leaves the company of Niger for that of the Ivory Coast at $13^{\circ} 56' N.$, $0^{\circ} 48' W.$ It runs roughly south-west until it reaches the White Volta, but follows the river upstream and westwards for some 30 miles. Leaving the infant river, it runs west and then south to the Black Volta. This is followed upstream, first north-westwards and then in an irregular curve south-westwards, as far as a place 40 miles north-north-east of Bobo Dioulasso. The boundary turns west, then north, then west again, and finally roughly south to reach $10^{\circ} 24' N.$, $5^{\circ} 24' W.$ From there it runs mainly west, largely ignoring natural features, until it effects a junction with that of French Guinea at $10^{\circ} 24' N.$, $7^{\circ} 42' W.$ Another sinuous stretch follows, but the San-karani is reached 50 miles north-east of Kankan and followed downstream for about 90 miles. The boundary then turns west-north-west and crosses the Niger 35 miles below Siguiri. For the remainder of its course it makes use of several rivers, the Kokoro, the Guinko, the Bafing, the Koloun Ko, the Kounda Ko, and finally the Balin Ko. It returns to its starting-point just above where the last named becomes the Falémé.

2. PHYSICAL DESCRIPTION AND GEOLOGY

Most of French Sudan is a flat monotonous plain lying between 750 and 1,200 feet above sea-level. There are four higher areas: the Manding mountains in the south-west, the Mina mountains near Sikasso, the Bandiagara highlands and the Hombori mountains east of Macina, and Adrar des Ifoghas in the north-east. All but the last named are formed of Palaeozoic sandstones, often penetrated by massive sheet intrusions of dolerite and gabbro. Human life is made possible only by the Niger, which enters from the south-west and sweeps to the south-east in a curve nearly 1,000 miles long. This great river and the Bani are the only permanent streams. All others in the south are seasonal. For most of the year the country is dry, but the rains begin to fill the watercourses in July, and by September

floods are widespread. Two months later the country is dry again and the rivers dwindle to mere trickles or to strings of disconnected pools. In the north water is always deficient, and wells are the chief

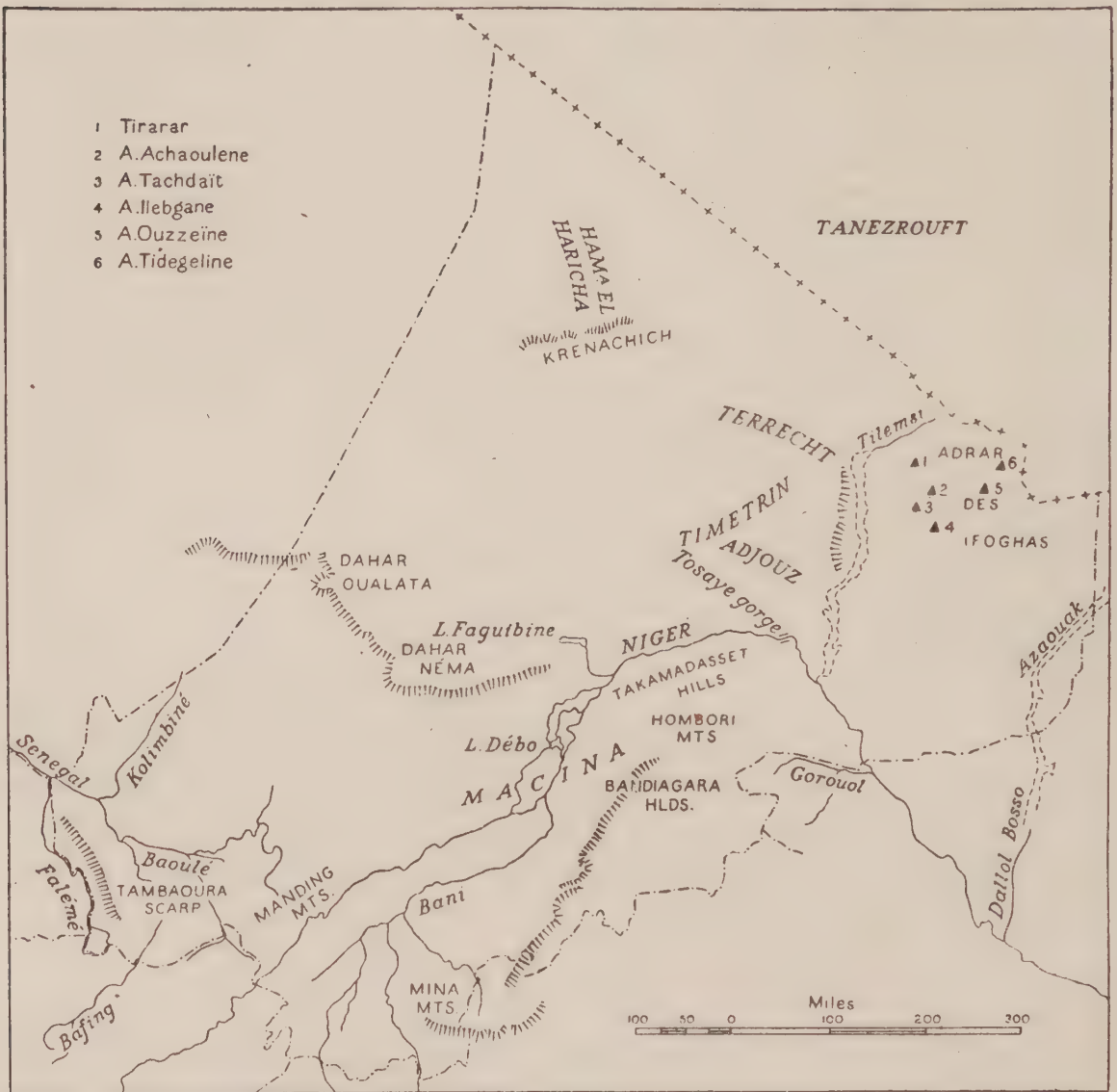


FIG. 20. *French Sudan: Principal Physical Features*

source of supply. The ouadis, however, usually flow for a day or two each year.

The West

In the western half of the colony the dominant geological formation is a thick series of flat-bedded Palaeozoic strata, principally sandstones, which lie unconformably on crystalline schists and gneisses of Archaean and on schists and quartzites of later pre-Cambrian age. The ancient schistose rocks are chiefly met with in outcrops north of Kayes, in the Falémé valley, and south of Bougouni.

The north-eastern spurs of Fouta Jalon enter from French Guinea in the south-west. An outcrop of Siluro-Devonian sandstone lies between the Falémé and the Bafing, its steep western face being known as the Tambaoura scarp. This spur is widest in the south. Its northern end is responsible for the sill which has made Kayes the head of Senegal navigation. A group of low flat-topped hills is strung along the border east of the Bafing and continues eastwards as the Manding mountains. The southern slopes of these latter dominate the Niger valley for 40 miles above Bamako. Except along the escarpments both the sandstones and the intrusive dolerites are usually covered by a thin mantle of laterite.

North of the railway a great semicircle of monotonous scrub-covered lowlands stretches north for more than 350 miles. The characteristic sedimentary rocks are Cambrian or Ordovician schists, quartzites, marbles, and sandstones, and there is very little laterite. The general drainage is west and south-west to the Senegal by way of the Kolimbiné and Baoulé. These and all other watercourses are dry for most of the year. Many end in the frequent depressions and flood them for a few weeks. The only heights worthy of note occur near Yelimané. North of Nioro and Nara low dunes begin to appear, and from the latitude of Néma they are more or less continuous. They line the sandstone scarp which enters the colony from Tichitt and which can be traced through Oualata and Néma to Goundam. This scarp is formed of Middle Palaeozoic sandstones and is from 300 to 500 feet high.

The Niger Valley

To the south of the Niger the lateritic plains drained by the headwaters of the Bani are unrelieved by any feature of note, until the Mina mountains are reached south of Sikasso. Their highest point rises just over 2,500 feet and their southern slopes terminate abruptly in scarps. Eastward from Koutiala and San the surface of the plain rises almost imperceptibly to an east-facing scarp, again of Middle Palaeozoic sandstone, which runs from the Ivory Coast border north to the Bandiagara highlands.

In its middle course the Niger's banks are much broken by reed-grown creeks and inlets, and the main stream is frequently interrupted by small islands. Historically these have been havens of refuge, and to-day their nutritious grasses attract pastoralists from great distances. The lacustrine region of the inland delta starts at Ké-Macina on the Niger and near Douna on the Bani, and in all its

extent to Kabara settlements are found only on the 'islands' which rise above the marshes. The waters of the two rivers here become dissipated over a very large area, forming an elaborate series of lakes which are linked by a network of waterways. The whole region is inundated at high water. From Ké-Macina the main stream of the Niger runs through Diafarabé to Mopti, at the confluence of the Bani; thence to Lake Débo; and, as the Issa Ber, via Niafouké and El Oualadji to Kabara. Above Lake Débo most distributaries are to the west, the Diaka, which branches off at Diafarabé, being the most important. Below Lake Débo the greater number lies to the east, the Bara Issa and the Koli-Koli being the largest. In the lower northern half of the region there are a score or so of lakes, all joined to the main river and remote from it by 50 miles or more. Most of the larger lakes lie on the right bank, but the largest, Lake Faguibine, is to the north. At high water this may be 50 miles long, 12 miles wide, and as much as 100 feet deep. In contrast to the fen-like flatness of the rest of the area, the neighbourhood of Goundam is hilly. Outliers of sandstone cause a group of narrow steep-sided hills that rise between 200 and 300 feet from the plains. A few miles below Kabara the lacustrine region ends and the river, reunited but much diminished, flows on to Tosaye, 15 miles above Bourem. It varies in breadth from 1 to 2 miles, but at low water is fordable at some places.

Surrounding the present inland delta is the great plain of Macina. This is semi-desert country of clay and sandy alluvium deposited by the Niger in late Tertiary and Pleistocene times. There are fixed dunes in many places, and the south of the plain is lateritized.

The Bandiagara highlands rise close east of Mopti, their steep eastern edge of sandstone being perhaps the most publicized feature of the colony. The scarp is an extension of that already mentioned east of Koutiala and San, and, indented but continuous, it may be traced for over 250 miles. Where it borders the Bandiagara highlands it averages 600 feet in height. Springs and settlements line the scree of its lower slopes. The outcrop continues north-east as a series of isolated hills. These achieve their greatest height (3,117 ft.) in the Hombori mountains, whose sheer slopes tower nearly 2,000 feet above the surrounding plains. Inside the loop of the Niger a monotonous plateau is drained eastwards to that river or south to the Volta. It is of pre-Cambrian gneisses and schists, capped with laterite, scrub-covered, and relieved only by occasional tors. The water-table is deep, and the surface is dry, but after the rains there are temporary marshes in the many shallow enclosed depressions. To the north a

ridge of static dunes known as the Takamadasset hills borders the Niger opposite Gourma-Rarous. Old rocks outcrop to form a line of low hills that runs from Hombori through Tosaye to join the Archaean complex of Adrar des Ifoghas. This outcrop is responsible for the gorge on the Niger above Bourem. The narrow channel and swift current make this one of the most difficult sections to navigate, and from this point down the river is constantly interrupted by rapids and rocky islands. South of Ansongo low scarped hills of pre-Cambrian rock overlook the valley of the Gorouol.

The Northern Deserts

Little is known of the plateau north of the Dahar Oualata. It is part of the Taoudenni-Araouane synclinal basin of Palaeozoic rocks; but over most of the region these are hidden by Quaternary and Tertiary deposits. This is especially so in the El Mereïé district in the south of El Djouf, where some 85,000 square miles of erg and reg stretch dead and unbroken to Bir el Ksaib and to the Carboniferous scarp of El Krenachich. Dunes are alined north-east and south-west and barkhans are numerous. North from El Krenachich a low spur runs almost to Taoudenni. To its east two clay depressions running north-west and south-east are separated by the Carboniferous limestone of the Hammada el Haricha. Eastwards and north-eastwards dunes and low mesas extend beyond the boundary, but the Archaean schists and gneisses from the north of Mauritania cause some rather more broken country as they cross the northern tip of the colony into Algeria.

North of Timbuktu and Bourem the sandy plain of Azaouad stretches for nearly 100 miles, and in that distance only rises about 150 feet. North-east of this, however, the surface is more broken and the scarped plateaux of Timetrin and Terrecht stretch almost to the boundary. The rock formations are fossiliferous limestones of Cretaceous-Eocene age with some outliers of pre-Cambrian schist. South-west of Aguelock is a limestone region known as Adjouz, with a particularly sterile surface and deep water-table; but elsewhere shallow wells are numerous in the sand-filled valleys. The higher ground is barren and rocky and its edges are scarped. Dunes block the ouadis between these scarps, and marshes form after the rains. The eastern edge of this dissected plateau is marked by the Kreb de Terrecht, which overlooks the Tilemsi valley. In the north the plateau descends in wide steps to the wastes of Tanezrouft, and is connected to Adrar des Ifoghas by the barren hills round Tesalit.

From Tabankort to Tesalit is about 170 miles, and throughout this distance the sandy trough of the Tilemsi valley has an average width of 30 miles. Tesalit lies above the eastern slopes under a bluff that is 300 feet high. To its north gullies lead down to a gorge which drains south to the Tilemsi and opens north to Algeria. Southwards a series of precipitous massifs towers above the eastern slopes of the Tilemsi. The most prominent are, from north to south, Tirarar, Adrar Achaoulene, Adrar Tachdaït, and Adrar Ilebgane, the last being somewhat isolated from the others. They are the bold western ramparts of Adrar des Ifoghas. This spur of Ahaggar lies at about 2,000 feet above sea-level and is drained mainly to the Tilemsi. Intrusions of granite form most of the western heights, but the main part of the massif is built of Archaean schists. The schists give rise to the higher ground along the boundary and in the south-east of the region, where are Adrar Ouzzeïne and Adrar Tidegeline. The ouadis are narrow, rocky, and tortuous. Owing to the Quaternary uplift of this area, they deepen westwards as they cut through the western heights. Though these gorges have wells and some vegetation, and even an occasional torrent, the uplands are completely barren, the surface is jagged and fissured, and slopes are precipitous.

Southwards Adrar des Ifoghas falls away to the plains which make up the south-east of the colony. They consist of Cretaceous and Tertiary clays or sandstones and limestones, capped with laterite and furrowed with steep-sided ouadis draining south. The main valley of the Dallol Bosso, here named the Azaouak, cuts across the extreme south-east. It is bordered by belts of fixed dunes, with marshy hollows during the rains. Occasional mesas break the surface, and north of Menaka is a rather larger group of hills, some of which rise more than 300 feet above the general level of the plains. They lie on a platform dipping south-east and scarped on the west.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	<i>Latitude N.</i>	<i>Longitude</i>	<i>Altitude in feet</i>
Aguelock	19° 29'	0° 50' E.	1,358
Araouane	18° 52'	3° 33' W.	935
Kidal	18° 28'	1° 21' E.	1,578
Oualata	17° 13'	6° 58' W.	873
Kabara	16° 41'	2° 57' W.	896
Néma	16° 32'	7° 14' W.	883
Gao	16° 18'	0° 08' W.	876
Menaka	15° 53'	2° 16' E.	968

	Latitude N.	Longitude	Altitude in feet
Hombori	15° 14'	1° 44' W.	951
Nara	15° 12'	7° 21' W.	935
Nioro	15° 12'	9° 36' W.	794
Mopti	14° 29'	4° 12' W.	906
Kayes	14° 24'	11° 26' W.	183
Ouahigouya	13° 30'	2° 20' W.	1,089
Ségou	13° 27'	6° 17' W.	994
Toukoto	13° 26'	9° 53' W.	c. 600
Faladié	13° 11'	8° 20' W.	1,093
Bamako	12° 39'	7° 58' W.	1,076
Satadougou	12° 36'	11° 24' W.	492
Koutiala	12° 18'	5° 25' W.	1,178
Bougouni	11° 24'	7° 30' W.	1,224
Sikasso	11° 18'	5° 38' W.	1,427

NORTH of latitude 19° the most important features of the climate are the almost complete lack of rain and an exceptional daily range of temperature. In the centre and south of the colony it is the summer rain which is all-important: in the former it is light, variable, and of short duration; in the latter it is heavier and more regular, lasting three or four months.

There are no meteorological stations in the north, but statistics for Tamanrasset are given on pp. 240–243 of the companion volume on Algeria (B.R. 505) and are typical of conditions in the southern Sahara.

Pressure (Fig. 58)

The rather striking pressure movements described in Volume I are not matched by any great barometric changes at any one station. Pressure is everywhere highest in January with a steep gradient from north to south, and falls rapidly to its lowest point in April or May in the south and in June or July in the north. The January position is gradually restored during the latter half of the year, steadily in the north, but in the south only after a setback in October or November. The highest monthly readings are about 1015 mb., and the lowest between 1010 and 1009 mb.

TABLE I. *Mean Daily Pressure (1000+millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Néma	13	12	09	08	08	09	10	09	10	10	11	14	10	6
Gao	15	13	10	09	08	09	11	11	11	11	12	14	11	7
Mopti	13	11	09	08	08	10	11	11	12	11	11	13	11	5
Kayes	12	11	09	08	08	11	12	12	12	11	11	13	11	5
Ouahigouya	12	11	09	07	07	09	11	11	11	10	10	12	10	5
Bamako	12	11	09	08	09	11	12	12	12	11	11	12	11	4

Daily variations are of the order of 5 or 6 mb. in the dry season and of 3 or 4 mb. during the rains. Maxima are recorded at 10.00 a.m. and 10.00 p.m., and minima at 4.00 a.m. and 4.00 p.m., but the early morning fall is often negligible. Sudden alterations of pressure are rare, except with tornadoes.

Winds (Fig. 23)

Surface Winds. The north-easterly harmattan is dominant for most of the year, but the south-westerly monsoon covers the southern half of the colony to latitude 20° between June and October for periods which are inversely proportionate to the latitude.

TABLE II. *Surface Winds*

<i>Station</i>	<i>No. of months with NE. winds dominant</i>	<i>No. of months with SW. winds dominant</i>
Araouane	9	3
Kidal	9	3
Gao	8	4
Mopti	$7\frac{1}{2}$	$4\frac{1}{2}$
Kayes	$7\frac{1}{2}$	$4\frac{1}{2}$
Bamako	7	5

During its season the harmattan, dry, hot, and dusty, is persistent; but not so the monsoon, whose humid current is less steady and often interrupted by the harmattan even in August and September. Neither is deep, for their maximum rarely exceeds 5,000 feet. Since both are wedge-shaped, the harmattan thinning southwards and the monsoon northwards, their depth over any place increases and then decreases through their seasons. Normal speeds are between 3 and 6 m.p.h., less in the north than in the south. Winds are strongest as the monsoon advances, and on most days they freshen about noon. Nights are almost invariably calm.

Tornadoes and Dust Devils. The violent squalls known as tornadoes are almost unknown in northern French Sudan. When they do occur, a wall of yellow dust precedes them, and they rarely give any rain. Their incidence increases southwards, and there is probably a double maximum in the extreme south.

West African tornadoes are not so violent as those of the gulf of Mexico. They occur on the northern edge of the monsoon, in the belt of instability between it and the harmattan. Their mechanism is still not yet fully understood, but, as Fig. 21 shows, they are probably due to an inversion of currents. They always blow up from the east, and the atmospheric changes are quite regular. The day before a tornado

there is more than the usual convection in the monsoon current. As the storm approaches, clouds mass on the eastern horizon with almost incessant lightning. There is usually so much low cloud that the main cumulo-nimbus of the storm is invisible except at a distance, but a

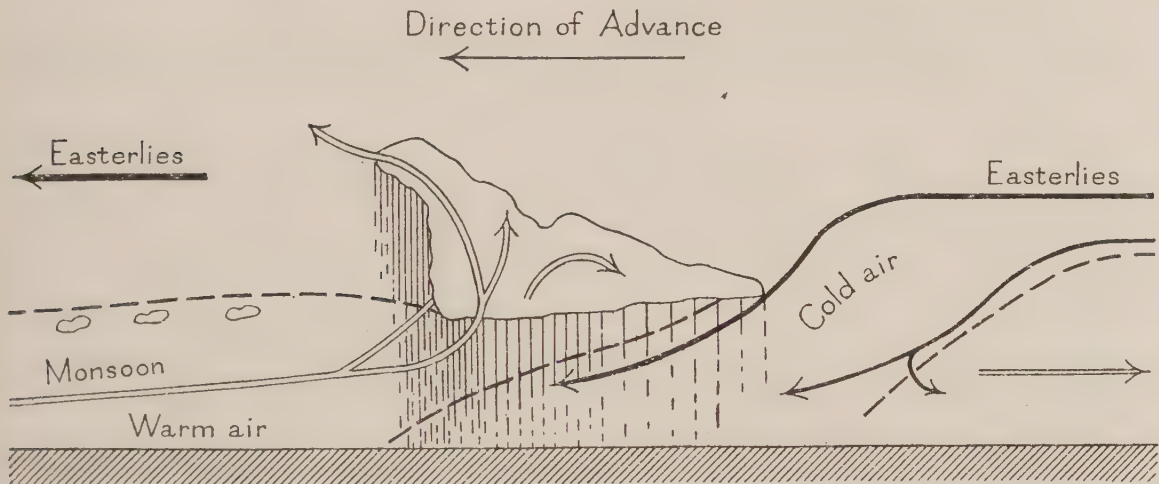


FIG. 21. *A Section through a Tornado*

pronounced arch of dark cloud with lighter cloud below has often been noticed. The south-west wind persists until, immediately before the storm breaks, there is a slight but definite rise in pressure. Then easterly squalls break with great force. Speeds of 40 to 50 m.p.h. are

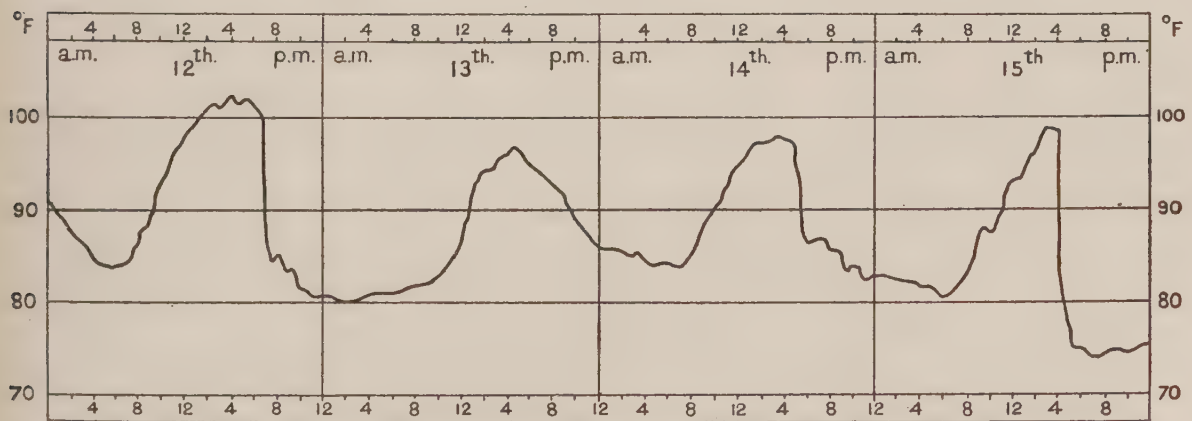


FIG. 22. *Temperature Variations at Nara in June 1924, showing Effect of Tornadoes on 12th, 14th, and 15th*

normal, with gusts up to 60 m.p.h. Rain may not fall until some minutes after the first squall, but, when it does, it is torrential, and is usually accompanied by violent lightning and thunder. There is an abrupt drop in temperature (Fig. 22). The squalls and heavy rain moderate after about half an hour, but easterly winds with light rain may persist for several hours before the storm has passed and the

normal monsoon current is re-established. Tornadoes travel on a relatively narrow front and so can easily be avoided by aircraft in flight, but their average rate of advance, 35 to 40 m.p.h., gives only brief visual warning of their approach. Those tornadoes which follow the wet season are often rainless.

In the desert areas of the north intense convection may cause local

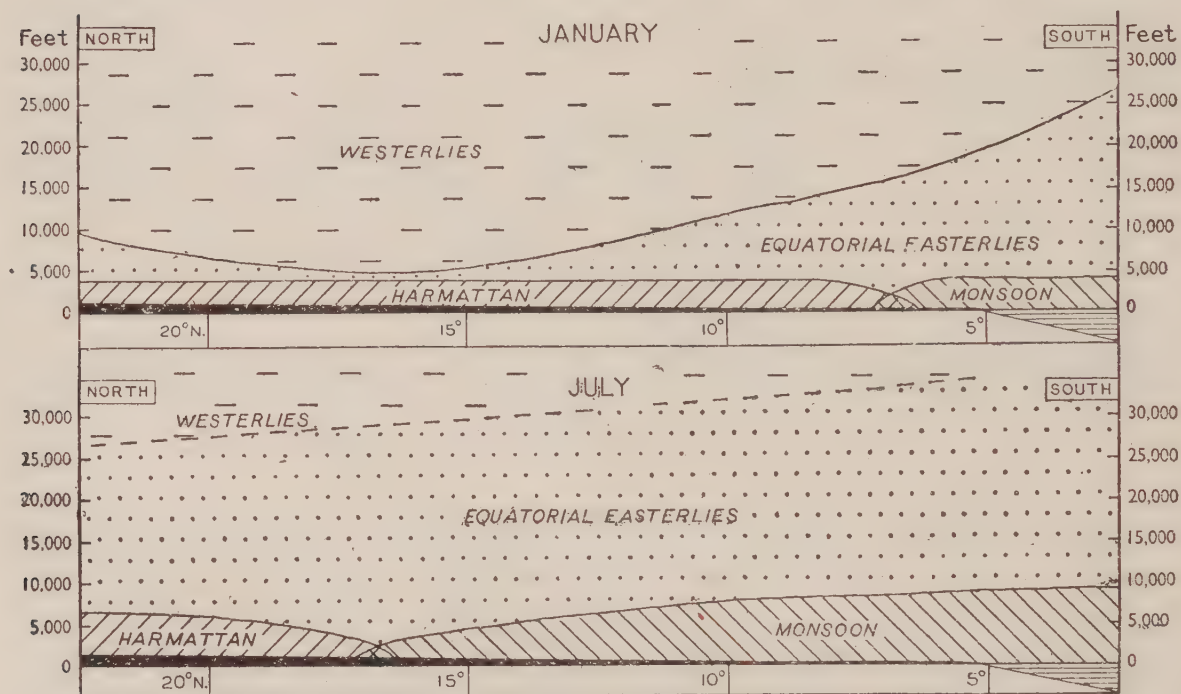


FIG. 23. *Vertical Distribution of Winds : Longitude 0°*

whirlwinds, called 'dust devils'. Most frequent in April and May under clear skies, they invariably occur about midday. Although they are very violent, they are short-lived and their horizontal movement is slow and erratic. They vary from 50 feet to 100 feet in diameter, and at their circumference there is an almost instantaneous transition to normal calm. The pillar of dust raised is usually 200 to 300 feet high, widest at top and bottom, and attenuated in the middle.

Upper Winds. As over the rest of West Africa, easterly winds lie above the harmattan and monsoon, and westerly winds above these again. Fig. 23 shows mean conditions, and, although levels vary from day to day and even from hour to hour, it is generally true that the equatorial easterlies extend to very great heights above the monsoon. In the dry season, however, they form a relatively narrow belt between the harmattan and the westerlies. The contact plane between the easterlies and the moist air of the monsoon is usually well defined by the cloud base; but, since the easterlies are also dry and carry a dust-haze, it is difficult to distinguish between them and the harmattan.

The speed of both these upper winds is slight and rarely exceeds 20 m.p.h., but strong winds have been recorded on occasion in the upper levels of the easterlies.

Rainfall, Cloud, and Thunder

Rainfall. Rain (Fig. 59) comes with the monsoon and is everywhere heaviest in August. It usually falls in short violent showers in the afternoon.

North of the latitude of Araouane rain is quite irregular. Years pass without any at all, and then there will be a brief, local downpour (usually with thunder, and occasionally with hail) so violent as to make the heaviest English storm seem like a mere shower. To camp in a ouadi is to court disaster, for the flood raised by these storms can overwhelm tents in a few minutes. Telegraph lines are cut and cattle drowned. At oases the immediate catastrophe of collapsed houses and crops washed out of the ground may outweigh the long-term advantages of wells and subterranean water replenished. Black rain-clouds often mass during July and August, and rain may be seen falling, only to be evaporated before ever it reaches the ground. The highlands of Adrar des Ifoghas receive perhaps half a dozen storms each year between July and September, although no records exist.

South of Araouane the rains gradually increase in both duration and quantity. Araouane receives about 2 inches of rain from 6 rain-days between July and September. Gao, only two degrees farther south, is already showing that increase, which, as Table III shows, continues southwards. There is no rain in the centre of the colony between October and June, and none in the south from November to April. Consecutive wet days are rare even in August.

The monthly totals vary considerably from year to year. For example, the August fall at Gao was 2.36 inches in 1938 and 6.85 inches in 1939. The regularity of the rains is greater southwards.

Hail is rare. In the Faladié district 9 storms were reported in one four-year period, but this is abnormal.

Cloud. During the dry season skies are clear: mean figures are from 1 to 3 tenths of sky covered in the north and centre, and from 2 to 6 tenths in the south. From June to October the corresponding figures are 3 to 5 tenths and 5 to 9 tenths. Readings differ widely, however, between stations, and there are considerable variations through the day. Nights are usually clear.

Cumulus is the commonest cloud, with cumulo-nimbus during the wet season. The former usually lies between 2,000 and 6,000 feet.

TABLE III. Mean Rainfall

R = Rainfall in inches.

X = Maximum fall in 24 hours.

D = Number of rain-days.

Station	Yrs. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Araouane	10	R 0.01 X 0.10 D 0.2	0.04 0.40 0.2	0 0 0	0 0 0	0 0 0	0.21 1.18 0.4	0.19 0.64 1.4	0.45 0.79 2.4	0.63 2.44 1.3	0.05 0.49 0.1	0.05 0.30 0.4	0.02 0.05 0.2	1.65 2.44 6.6
Kidal	9-10	R 0 X 0 D 0	0.04 0.36 0.2	0 0 0	0.04 0.45 0.2	0.20 1.58 0.5	0.23 0.43 1.7	1.01 0.77 5.2	2.49 3.56 7.1	1.06 1.22 3.3	0.05 0.30 0.3	0 0 0	0.01 0.04 0.3	5.13 3.56 18.8
Oualata	5	R 0 X 0 D 0	0 0 0	0 0 0	0 0 0	0.28 1.10 0.4	0.69 1.38 1.4	0.69 1.38 1.4	1.73 1.30 3.2	1.11 1.14 2.4	0.20 0.79 0.4	0 0 0	0.25 0.91 0.4	4.26 1.38 8.2
Gao	8-10	R 0.04 X 0.29 D 0.3	0.01 0.1 0.1	0.06 0.29 0.2	0.12 0.07 0.2	0.33 1.46 1.1	1.16 0.90 4.2	2.87 2.33 8.5	3.64 2.36 8.9	0.98 0.96 4.6	0.14 0.41 0.6	0.03 0.1 0.1	0 0 0	9.34 2.36 28.8
Menaka	7-10	R 0.02 X 0.1 D 0.1	0.04 0.08 0.3	0.02 0.20 0.1	0.01 0.11 0.1	0.40 1.26 1.2	0.56 0.85 3.3	1.94 1.68 7.0	3.76 2.15 8.0	1.33 1.73 4.2	0.02 0.12 0.1	0 0 0	0 0 0	8.04 2.15 24.2
Mopti	10	R 0.04 X 0.24 D 0.3	0.01 0.08 0.3	0 0 0	0.10 0.43 0.9	1.11 4.04 2.0	1.48 0.90 5.7	6.33 3.25 10.4	6.94 2.97 11.3	4.08 2.91 7.6	0.37 0.73 1.9	0.04 0.20 0.3	0 0 0	20.50 4.04 40.7
Kayes	5	R 0.08 X 0.67 D 0.1	0 0 0	0 0 0	0.03 0.1 0.1	1.01 1.82 2.1	3.80 1.95 8.4	6.28 2.64 11.0	9.49 4.85 16.9	7.38 2.72 13.0	1.69 1.84 4.6	0.04 0.11 0.6	0.01 0.60 0.3	29.78 4.85 57.1
Ouahigouya	8-10	R 0.03 X 0.1 D 0.1	0.04 0.03 0.1	0.24 0.92 0.5	0.33 1.14 1.2	1.95 2.68 3.5	3.98 3.27 7.3	7.45 3.15 11.3	9.76 3.70 12.8	3.80 2.48 8.9	1.38 1.77 2.6	0.30 1.36 0.8	0 0 0	29.18 3.70 49.1
Bamako	10	R 0.04 X 0.42 D 0.1	0.03 0.1 0.1	0.07 0.20 1.0	0.62 1.29 2.2	2.86 2.68 6.9	5.34 2.72 11.7	10.98 4.19 17.9	13.68 6.94 19.1	8.05 3.22 14.1	1.74 2.93 5.4	0.58 1.87 1.3	0.06 0.1 0.1	43.96 6.94 79.9
Sikasso	8-10	R 0 X 0 D 0	0.63 4.37 0.2	0.84 1.81 2.7	1.58 1.03 5.7	4.30 4.84 8.3	7.09 3.15 11.9	10.76 5.43 16.8	14.52 5.37 18.0	11.19 3.10 18.0	3.65 2.66 9.0	0.53 0.86 2.5	0.03 0.28 0.1	55.12 5.43 93.2

In the harmattan it is open and light, but in the monsoon it is heavier. During December and January cirro-stratus occasionally covers the sky, and cirrus is common at the base of the westerlies all the year.

Thunder. In the north thunderstorms are rare and quite irregular. Elsewhere they number from 60 to 90 per annum; but in the centre they are exceptional between November and March and in the south from December to February.

Storms may come at any time during the rains, when electric tension is everywhere very high; but in the south, since many occur with tornadoes, there is a tendency for them to be more frequent at the beginning and end of the wet season. They are, by European standards, very violent.

Temperature and Humidity

Temperature. Annual variations are greater in French Sudan than in any other West African colony, except Niger. In the south of the colony the temperature, after rising rapidly in the early part of the year, falls with the rain, and rises again when it ceases, before falling to the winter minimum. In the extreme south the rainfall is heavy enough to lower the August maxima below those of January.

TABLE IV. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Araouane	80	85	95	108	111	115	110	108	108	101	89	79	99	36
	51	55	63	69	76	82	81	77	79	74	62	54	69	31
Kidal	83	90	98	104	108	111	107	103	104	102	95	85	99	28
	55	57	62	70	77	81	78	76	77	75	66	56	69	26
Néma	89	95	102	107	108	109	102	97	101	103	96	86	100	23
	61	66	71	76	77	82	79	76	77	79	72	63	73	21
Gao	87	91	99	107	110	108	102	96	101	104	96	89	99	23
	59	61	69	74	80	82	78	76	78	77	71	62	72	23
Kayes	95	101	106	111	110	104	94	90	92	95	99	94	100	21
	62	66	72	77	82	79	75	73	73	74	68	64	72	20
Ouahi-gouya	89	96	102	106	104	99	92	89	92	98	97	91	96	17
	60	64	71	77	79	76	72	72	72	74	69	61	71	19
Bamako	92	97	101	103	101	94	88	86	88	92	94	91	94	17
	63	67	74	77	78	74	72	71	71	72	67	64	71	15

For most of the year the lack of cloud allows almost unimpeded insolation from a nearly vertical sun, and, especially in the north, reflection from the bare soil is intense. As a result sun temperatures are 20° or more above screen figures by day, and night temperatures under the clear skies are a similar number of degrees lower. In the dry season the daily range often reaches 60° or 70°.

There is a very rapid rise and fall at sunrise and sunset, and during the wet season a tornado or the onset of rain will lower temperatures suddenly (Fig. 22).

Some interesting experiments on soil temperatures were made by O. Olufsen during his Saharan journey of 1922. A few of the figures obtained on three consecutive days are tabulated below.

Sand Temperatures in °F.

	<i>Time</i>	<i>Surface</i>	<i>1½ feet down</i>
1.	2.00 p.m.	118°	77°
2.	6.00 a.m.	48°	71°
	2.00 p.m.	116°	81°
	8.00 p.m.	71°	71°
3.	6.00 a.m.	55°	70°

The surface temperature varies, however, with the texture of the rock, and much higher figures have been registered. Indeed it is on record that soldiers have preferred to stand and risk being sniped rather than lie down and be almost literally grilled alive.

Freezing-level is not reached until about 15,000 feet, and severe icing is unlikely except in well-developed cumulo-nimbus clouds.

Humidity. Variations in relative humidity again show how all climatic features of the colony hinge upon the rainfall. Readings are everywhere lowest in March, April, or May, just before the wet season, and highest in August. The lack of vegetation intensifies the very dry conditions which obtain in the north.

TABLE V. *Mean Relative Humidity (percentages)*

Two observations: 8.00 a.m. and 6.00 p.m. Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

<i>Station</i>	<i>Ƴ.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>Ƴ.</i>	<i>Ƴ.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>	<i>Year</i>	<i>Annual Range</i>
Araouane	33	31	27	20	20	26	41	42	44	28	35	41	32	24
	19	18	17	13	15	16	24	32	29	18	23	28	21	19
Gao	30	30	29	29	30	45	62	74	63	43	34	34	42	45
	19	18	15	11	15	23	34	47	35	20	21	21	23	36
	25	26	24	21	19	24	36	51	39	28	29	31	29	32
Mopti	53	50	38	38	51	65	79	85	82	73	50	48	59	47
	39	31	24	22	30	38	55	68	66	56	55	44	44	46
Kayes	32	31	29	30	46	70	83	88	89	85	57	42	57	60
	16	14	13	14	25	42	64	70	67	58	24	20	36	57
	16	14	13	12	21	37	61	70	71	60	33	24	36	59
Bamako	35	34	35	47	62	76	86	89	87	81	60	40	61	55
	14	12	15	22	34	49	67	73	66	52	30	19	38	61
	19	15	15	22	33	50	68	73	70	64	46	28	42	58

Daily variations are greatest with the harmattan, when figures as low as 10 per cent. are common. So intense is the evaporation under

such conditions that the human skin feels dry and parched even with plenty of water available, and the body feels cold when temperatures are still as high as 60° . The stitching on European shoes lasts but a few days, and the leather layers of the sole open and crack.

Visibility.

On the whole visibility is good, and it is at its best in the wet season. It averages 10 miles in the north and 12 miles in the south and centre. At certain places in the two latter the mean for July and August is as high as 22 miles. The harmattan carries a haze of varying intensity, which is thickest near dunes. Dust in the easterlies causes a hazy belt above the clear surface layers of the monsoon.

Mist and fog are rare, but, when the harmattan is blowing, they are liable to occur in the early morning over swamps. They do not persist, however, nor do they rise very high. The worst visibility is caused by sand storms, rain, and bush fires. The first do not occur south of latitude 14° , but they are severe while they last and may leave a dense dust haze for several days. Deterioration from the second is rapid, especially in the south. The bush is fired in the months immediately preceding the rains, and smoke may rise 2,000 or 3,000 feet.

Meteorological Services

One of the chief stations of the whole Federation is at Bamako, which broadcasts reports for French Sudan and Niger and also for the north of the Ivory Coast. The following French Sudan stations have their reports included in these broadcasts: Gao, the only other fully equipped station in the colony; Aguelock, Kabara, Kayes, and Mopti; and Araouane, Bougouni, Hombori, Kidal, Koutiala, Menaka, Nara, Néma, Nioro, Ouahigouya, Satadougou, Ségou, and Toukoto. Bamako, Gao, and Kayes have apparatus for investigating the upper air. Rainfall records are also kept at twenty-five stations other than those mentioned above.

5. VEGETATION

IN the large area covered by this colony the following vegetational zones occur from north to south: central Saharan, south Saharan, thornland, and grass-woodland.

The Desert

The boundary between the first two zones is indefinite. The extreme north of the colony is undoubtedly desert, but details of its feeble plant-life are lacking. An outline picture, however, has been given in Volume I, pp. 106-8. The transition belt between the central and the south Saharan zones is probably between 20° and 21° N. latitude. The latter zone is fairly wide, approximately 180-300 miles from north to south, its southern limit being roughly the latitude of Timbuktu.

The most typical physical features are the sand-dunes. These may be either mobile or fixed, and they are covered by a low meagre growth, of which the tallest shrubs rarely exceed 15 feet in height. In general terms the vegetation may be described as being of a semi-desertic type, becoming more and more desertic northwards. Permanent plants are of two main kinds: shrubs or small trees, which are often spiny, and perennial herbs with extensive underground systems of roots and stems. Plant life is most in evidence after rain; for then not only do the perennials put forth flowers and new foliage, but also there is a considerable development of annuals, forming an ephemeral 'acheb'. The summits of the most stable dunes and also the turfy hollows between dunes have a woody vegetation that is frequently dense enough to be termed a thicket. Important components of these brushwoods include acacias (*Acacia raddiana* and *A. senegal*, often parasitized by members of the mistletoe family), jujube (*Zizyphus mauritiana*), salt bush (*Salvadora persica*), the asclepiad (*Leptadenia spartium*), and *Combretum aculeatum*. The asclepiad is regarded as good camel food, and it also provides the natives with materials for an inextinguishable slow match. On scarcely fixed sand the cram-cram grass (*Cenchrus biflorus*), of which many travellers speak with disgust because of its stiff barbed bristles, is exceedingly common. Another characteristic plant is the colocynth or wild gourd (*Citrullus colocynthis*). This has green marbled fruits that are as big as or bigger than oranges and that turn yellow. The leaves and stems are eaten by goats and wild game, but the fruits are too bitter to be eaten except by donkeys.

The Thornland

The thornland occupies a somewhat irregular belt across the centre of the colony, including the province of Ouahigouya. Away from the watercourses, lakes, and marshy depressions the general vegetation is mostly rather open. Thorny shrubs and small trees are dominant

among the woody plants, and tufted grasses and species with stems prostrate in the soil common among the herbs. The country is *par excellence* that of the gum-producing acacias, the African myrrh (*Commiphora africana*) with fragrant leaves and bark and yielding a gum-resin, and sennas (*Cassia* spp.). In addition to the open thornland there are numerous wet or marshy areas, mostly associated with the Niger. In the shallower parts of the river itself there is a rich aquatic flora of water-lilies (*Nymphaea* spp.), duckweeds (*Lemna* and *Wolffia*), and water lettuce (*Pistia stratiotes*). The sandy banks and margins are usually covered with members of the sedge family and with other marsh herbs. In many parts there are extensive water-meadows, where grasses are abundant. On some banks there are trees and shrubs from the grass-woodlands. These have extended their range northwards along the Niger valley and form a somewhat impoverished type of fringing forest. Among the more important trees are the African nettle tree (*Celtis integrifolia*), the tamarind (*Tamarindus indica*), the sausage tree (*Kigelia africana*), and the West African ebony tree (*Diospyros mespiliformis*). Of the shrubs the following may be mentioned: a member of the spurge family, *Phyllanthus reticulatus*; a rubiad, *Mitragyna inermis*; and a composite, *Vernonia* sp. A few woody climbers, notably *Landolphia senegalensis*, also occur in these fringing forests. Round the larger lakes, such as Lake Fagui-bine, there is often a fairly clear sequence of rings as follows: spongy sand, humid soil, cultivated fields of rice or millet, short grazing turf of grasses and sedges, and sand-dunes.

The Grass-woodland

The grass-woodland consists of extensive grasslands broken by clumps of trees and brushwood or by scattered trees. In the dry season firing of the grassland and brushwood is of regular occurrence. In the Sudan subzone the characteristic tree is the shea-butter tree (*Butyrospermum parkii*), which is often accompanied by the African locust bean (*Parkia biglobosa*). On the lateritic plateaux the climbing vine *Landolphia senegalensis* and a species of *Combretum* grow in profusion in some places. In others, however, the hills are extremely arid, and the meagre vegetation may even be reduced to low shrubby or sub-shrubby plants growing in rock clefts. Elsewhere on the plateaux a turf of grasses and bulbous plants develops in the rainy season. In marshy areas the wine palm (*Raphia*) and bamboos (*Oxytenanthera abyssinica*) are common. The banks of rivers and streams often have well-developed fringing forests with tall figs (*Ficus* spp.),

legumes (*Cassia* spp., &c.), wine palms, and woody climbers. Underneath and in the more open areas there is, generally speaking, a tall herbaceous vegetation. Much of this subzone is heavily cultivated. In the Guinea subzone the grasses are taller and along the water-courses the fringing forests are even better developed. The shea-butter tree becomes rarer, while the Meni oil tree (*Lophira alata*) is abundant, forming large trees up to 90 feet in height and 4-6 feet in diameter. In places the 'Sau' (*Berlinia doka*) forms vast thickets. On lateritic outcrops the rubber liane (*Landolphia heudelotii*) becomes more and more abundant.

7. HISTORY

THE story of French Sudan is of more than local interest, and belongs largely to the history of French West Africa as a whole. From the ninth to the sixteenth centuries the country was, in whole or in part, subject to the Empire of Ghana, the Mandingo Empire, and the Empire of Gao. The eighteenth- and nineteenth-century explorers, although in the main their object was to discover the course of the Niger and to unveil the mysteries of Timbuktu, added to European knowledge of West Africa as a whole; the French conquest of the Sudan was conceived by Faidherbe and carried out by him and his successors as part of a general scheme of penetration; and it was not until 1892 that French Sudan ceased to be an appendage of Senegal and started existence as an independent colony. These facts will explain why in broad outline the history of the colony has already been told. They explain also why no description is given of the explorations of Houghton (1791), Mungo Park (1795-1797 and 1805), René Caillié (1827), and Heinrich Barth (1850-1855), all of whose journeys took place in great part within the boundaries of the present colony. In the history of French West Africa, however, as given in Volume I, there remain many gaps of local interest to French Sudan, both in its earlier and its later stages. These gaps it is the purpose of this section to supply, thus presenting the story as a connected whole, though at the price of some repetition of what has gone before.

Native History before the French Occupation

The Moshi Kingdom of Yatenga. In the south-east of the modern colony the Moshi kingdom of Yatenga (capital: Ouahigouya) never came under the domination of the Mandingos or of the Songhaï. In 1333 the Morho-Naba Nassegué raided Timbuktu, put the Mandingo

garrison to flight, pillaged and burned the town, and then retired with immense booty. Curiously enough, the Mandingos did not retaliate. In 1477 Nassere invaded Macina and the Bagana country and sacked Oualata in 1480. A few years later, in 1497, this monarch successfully resisted an attack by the Songhaï. Notwithstanding these medieval ebullitions, the kingdom of Yatenga pursued on the whole a peaceful and unaggressive existence from its foundation about the end of the twelfth century until the coming of the French. Like its sister kingdom of Ouagadougou it developed a highly organized government, and, although counting many Moslems among its subjects, as a state it always remained a bulwark against Islam and preserved a homogeneity unknown among its greater neighbours to the north. It may well be that its continued independence was due to these characteristics.

The Bambara Kingdom of Ségou. The Bambaras inhabiting the country on both sides of the Niger from Bamako to Dienné were at first subject to the Mandingo Empire, but in the last quarter of the fifteenth century became, in part at least, subjects of the Songhaï emperor Ali Ber. On the taking of Timbuktu by the Moors in 1591 and the consequent dissolution of the Songhaï Empire, the Mandingos for a time reasserted a nominal suzerainty over the Bambaras. About 1660, however, Biton Kouloulabi cast off the remnants of Mandingo authority and pushed the last emperor, Mama Maghan, back to Kangaba, the original home of his race. About 1665 part of the Bambaras emigrated across the Niger to found the kingdom of Kaarta, which will be noticed later; but Biton established himself at Ségou, where he raised a professional army of slaves and organized a permanent fleet of small craft on the Niger. At his death in 1710 his authority stretched from Mourdiah eastward through Dienné to Timbuktu. Biton's son, Denkoro, provoked the army to rise by his cruelties, and he and his family were massacred in 1740. After ten years of anarchy Ngolo Diara, a slave who had been loyal to the original royal family, seized the throne and founded the Diara dynasty, which was to last till the end of the kingdom. Ngolo restored its power, but he was not able to subdue the Yatenga Moshi. In 1787, when he was campaigning against them, he died of disease at the age of 90.

In the reign of Monson Diara (1792-1808) Dassé, the king of Kaarta, tried to establish a suzerainty over Ségou, but met with no success. Monson not only repelled his attacks but carried the war into the enemy's country, besieging Gemou, the Kaarta capital 35 miles

south of Nioro, in 1796. Moorish aid being refused him, Monson withdrew after pillaging the country, but without taking the town. In 1803 he sacked Timbuktu, whose inhabitants had refused to pay the annual tribute. Two years later he gave facilities to Mungo Park, whom he had met also on his first journey, to construct the fleet at Sansanding with which he hoped to descend the Niger to the sea. Monson died in 1808. The remainder of the history of the Ségou kingdom is taken up with wars against Kaarta and their revolted vassals the Fulani of Macina, who under Seku Hamadu had proclaimed their independence in 1810. Finally, in 1861, suzerain and vassals united against the Toucouleur El Hadj Omar, by whom they were both destroyed.

The Bambara Kingdom of Kaarta. From the foregoing paragraphs much of the history of the Bambara kingdom of Kaarta (or Masasi) will have been gathered. The dynasty was an elder branch of that of the Ségou kings. About 1665 the representatives of this elder branch led their followers *en masse* across the Niger and established themselves in Kaarta. Sounsa, their king, fixed his capital at Sountian, 25 miles west of Mourdiah, and rapidly established his mastery over the remnants of the Mandingo Empire. Tradition says that he gave a great impulse to agriculture in his dominions. He died in 1690. In the eighteenth century Sébé, who reigned from 1709 to 1760, was invited by the Diaras to give aid against the Arabs. Under pretext of aiding them, he annexed their country, imposing a tribute which was paid regularly until about 1840. The king and his successors, Dénimbako and Sirabo, extended their dominions some way north of Nioro, and by the end of the century the men of Kaarta were raiding Bambouk. They never succeeded, however, in taking Koniakory, then the capital of the King of Khasso, nor could they permanently establish their authority on the left bank of the Senegal. Dassé's attack on Ségou failed, as we have seen, but during the first forty years of the nineteenth century he and his successors were strong enough to raid in all directions from Gemou, Dioka, and Yelimané, their successive capitals. The refusal of the Diaras to pay their tribute heralded the downfall of the Kaarta kingdom, and in 1854 its last king, Kandia, was defeated and put to death by El Hadj Omar.

The Fulani Kingdom of Macina. Under the Fulani mallam, Seku Hamadu, Macina shook off the suzerainty of Ségou about 1810. Seku Hamadu captured Dienné and established himself at Hamdallahi on the Bani, about 30 miles lower down the river. From Hamdallahi he extended his dominions as far as Timbuktu, which he conquered

in 1827. Until his death in 1844 Seku Hamadu ruled his kingdom wisely. He divided it into provinces, at the head of each of which was a governor and a kadi; he established conscription for military service; and he organized a very fair system of taxation, which was principally levied on cattle and on crops. He also insisted on his subjects conforming to Islam, although most of them had been pagans up to that time. His dynasty was not to last, however, for in 1862 El Hadj Omar took Hamdallahi and put Seku Hamadu's grandson to death.

With the single exception of Seku Hamadu we look in vain for any spark of civilization or decent government in the western Sudan from 1591 to the coming of the French. Its history is one confused tale of tyranny, rapine, bloodshed, and slavery, and it was well for the natives that some European Power should intervene.

The French Occupation

Early Contacts before 1854. Quite early in their connexion with Senegal, the French pushed across the Falémé, the present boundary between that colony and French Sudan, into Bambouk; and they also established temporary posts higher up the Senegal than its confluence with the Falémé. In 1698 André Brue obtained permission from the chiefs on both banks of the Senegal to build posts for the protection of French trade, and Fort St. Joseph was completed in 1700 at Makhana near Ambidedi. It was swept away by floods the next year and, although reconstructed, was destroyed by hostile natives in 1702. A new and more lasting fort was built in 1712. Never before had any European nation attempted to establish a permanent post so far from the sea. A few years later the fort of St. Pierre was built on the Falémé, and other posts followed. By Brue's orders the mineral wealth of Bambouk was explored, and further expeditions with the same object were sent there in 1730, in 1731, and in 1756. Nothing would induce the directors of the French company to sink capital in mining, the advanced posts were abandoned, and the Falémé was not crossed again by the French until after the Napoleonic wars. In 1824 Baron Roger, Governor of Senegal, sent a further prospecting expedition to the mines of Bambouk, which confirmed the view of a century previously that the way to riches did not lie through gold. The Société de Galam, founded the same year by merchants of St. Louis, opened depots for the gum trade on the banks of the Falémé, and at Makhana and Medine on the Senegal, all within the confines of the present French Sudan. Between 1825 and 1837 Duranton, an officer of their company, lived for long periods at Medine, the capital of the King of

Khasso. He married the king's daughter and obtained much influence with his father-in-law. His reputation was by no means unblemished, and he was accused of fomenting trouble between the various tribes of Khasso, and even of favouring British traders at the expense of his own countrymen. It is generally considered, however, that his shady career paved the way for French political influence. This opinion was held by Anne Raffenel, who was sent on a journey through Khasso in 1843. In 1837 Duranton was arrested by the French authorities, but, after an inquiry at Bakel, he was set at liberty. He then returned to the country of his adoption and died there in 1838.

Faidherbe. On his accession to power, Napoleon III instituted a forward policy in West Africa. Faidherbe was appointed Governor of Senegal in 1854, and although his immediate object was the pacification of that colony, he did not confine himself to that alone. He intended to make the Senegal river safe for French trade as far as the falls near Medine, the upper limits of navigation, and to ensure that France would be the market for all produce originating on either bank of the river. In 1855, therefore, he concluded a treaty with the King of Khasso, who, perhaps owing to his kingdom's earlier association with Duranton, was ready to put himself under French protection and to grant the French the right to build a fortified post in his country.

This step brought the French into collision with El Hadj Omar, the Toucouleur fanatic, who has already been mentioned, and whose dominions extended from Bambouk to Timbuktu. He besieged the French post at Medine, which, after a wonderful defence by a French garrison under Paul Holle, a St. Louis half-caste, was relieved by Faidherbe in July 1857. In 1859 he attacked Matam, but was again brilliantly repulsed by Paul Holle. These continued onslaughts on the territory of their ally at Khasso afforded the French a pretext for interference in the Sudan, and in 1863 Lieutenant Mage received instructions from Faidherbe to 'explore a line to join our establishments on the upper Senegal with the upper Niger, and especially with Bamako, below which the Niger will not perhaps present any serious obstacles to navigation'. In the same document the general stated his intention to establish a line of posts between Medine and Bamako, or any other point on the upper Niger which should appear suitable for a commercial port on the river. He hoped that future Sudan trade would follow the route to the west coast rather than go northward by caravan to the Mediterranean. By these instructions, which attracted little attention from the French Government at the time, France was com-

mitted to political action in French Sudan. The policy was conceived first and foremost in the interests of French trade and secondly for the glory of the French flag, but the result has been to bring such peace and prosperity to the natives of the Sudan as they had never known before.

Ahmadu and Samory. Lieutenant Mage, accompanied by Dr. Quintin, left Medine in November 1863, surveying his route as he went. Passing through Bafoulabé and Kita, both of which villages Mage selected as posts, and travelling across country, the two men reached the Niger at Nyamina, and proceeded by boat to Ségou, arriving on 28 February 1864. Here they were received by Ahmadu, the son of El Hadj Omar. Shortly after their arrival the news came of El Hadj Omar's death when fighting against the Fulani at Hamdalahi. The Frenchmen were not informed of this for many months, and were detained at Ségou for more than two years. At last, after signing a treaty which was to give satisfaction to nobody, Ahmadu, who had succeeded to his father's dominions round Ségou, let Mage and Quintin return to Medine in May 1866. On the way they visited Nioro and Koniakory.

Thirteen years later, in 1879, Galliéni, then a young captain, undertook a preliminary mission to prospect, both politically and topographically, a railway line to connect the Senegal and the Niger. In the following year the French Parliament, after a full inquiry, approved the proposal. During 1879 and 1880 most of the chiefs readily signed treaties, though at one place, Dio, 20 miles north-west of Bamako, Galliéni's column was attacked and fourteen of his native soldiers and carriers were killed. Crossing the Niger at Bamako, he was stopped at Nango by Ahmadu's emissaries. After negotiations lasting ten months he signed a treaty by which, as he thought, Ahmadu put his territories on the left bank of the river under French protection. Ahmadu later repudiated this, stating that he had only entered into a trade agreement. Galliéni reached Kita in April 1881. He was met by Colonel Borgnis-Desbordes, the first Commandant-supérieur, who had received definite orders from the French Government to push at least as far as Kita, overcoming opposition if such should arise. As far as Kita Borgnis-Desbordes had no difficulty, but on his arrival there the villagers of Goumbanko, 5 miles to the south, refused to furnish supplies. Their village was attacked and destroyed, but a French officer was killed in the process. While at Kita Borgnis-Desbordes first made contact with Samory, the fanatic who was to be a scourge to French Sudan, French Guinea, and the Ivory Coast for

the next seventeen years. Samory's troops were attacking Kéniéra south-east of Siguiri, and the inhabitants, Mandingos like those of Kita, appealed for French aid, which Borgnis-Desbordes felt he must give or lose prestige with their kinsmen. For the first time a French military expedition crossed the Niger, and on 26 February 1882 a severe defeat was inflicted on Samory's forces. Honour having been satisfied, Borgnis-Desbordes, not wishing at the moment to assume further commitments, military or political, withdrew. In the following year he destroyed Mourgoula, whose chief had been instigated by Samory to attack the French post, and, after some fighting, he arrived at Bamako. Here, on 7 February 1883, he laid the foundation stone of the fort. On 12 April he was again attacked by Samory's forces, which he defeated on the Oyako, a small stream a few miles above Bamako. This defeat kept Samory quiet for some time, and the threat of French force implied in it also quietened Ahmadu.

In three years Borgnis-Desbordes had carried out Faidherbe's projects of seventeen years earlier. Medine, Bafoulabé, Badoumbé, Kita, and Bamako had been built, making a chain of forts over 200 miles long from the Senegal to the Niger. This chain was linked by telegraph, and in 1881 the railway from Kayes to the Niger was started. The population generally was content to accept French suzerainty, and, but for the menaces of Ahmadu and Samory, would have settled down peaceably nearly twenty years earlier than it did.

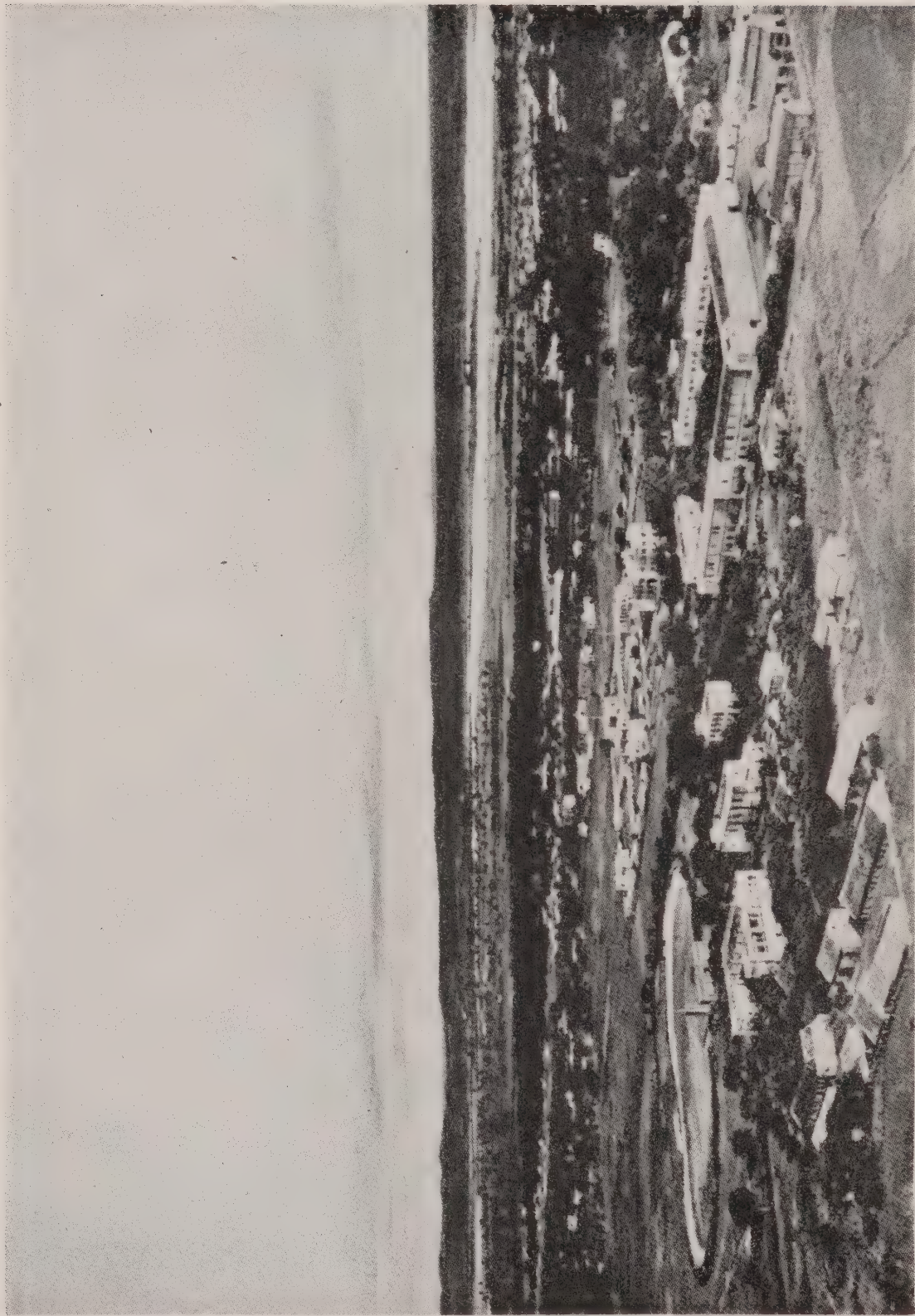
The next two years (1883-1885) passed in comparative peace, and the General Act of the Conference of Berlin (26 February 1885) recognized France's claims to the upper Niger, but declared that navigation on the river should be free to all. This year and the next Samory renewed his attacks, but after his troops had sustained defeats round Niagassola and at the Fatako river near Galé, he approached the French and entered into the treaty of Kenieba-Koura. This was not satisfactory to the French because, although it confined Samory to the right bank of the Niger below Siguiri, nothing definite was laid down as to his rights above that place and a way was thus open to him to invade the Mandingo country and Bam-bouk. A subsequent treaty, signed at Bissandougou on 25 March 1887, laid down the frontier as the Tinkisso from its source to its confluence with the Niger, and then the Niger as far down as Nyamina. This was at all events a clear boundary, although it gave Samory territory on the left bank of the Niger above Siguiri. He also placed his domains under the protection of France. But this protectorate was not regarded very seriously, for when Samory made an unpro-



42. *A Djerma woman*



43. *Calabash sellers at Dienné*



44. *Bamako*

voked and unsuccessful attack on Sikasso, whose king Tiéba resisted a siege from May 1887 to August 1888, the French contented themselves with advice. In point of fact Sikasso was outside the French protectorate, but in 1888 and 1889, having pillaged their own country to the limits of its capacity, several bands of Samory's marauders crossed the Niger into undoubted French territory. With exemplary forbearance the French treated again, and by the Convention of Niako (1889) Samory yielded all territory between the Tinkisso and the Niger, and engaged to keep his hordes to the right bank of the latter river.

After this Samory never crossed the Niger again, and, although he devastated the south-west of the colony between Bougouni and Sikasso in 1893, almost the whole of the remainder of his career was passed in French Guinea and the Ivory Coast. His capture in September 1898 near Man in the Ivory Coast removed a menace from the French Sudan no less than from those colonies.

Having repudiated the Treaty of Nango, Ahmadu installed his son Madani at Ségou in 1884, and himself took up his headquarters at Nioro, from which he was continually threatening the French and the tribes of Kaarta who had treaties with them. In 1887, however, Galliéni, who had become commandant in 1886, again persuaded him to accept French protection. This gave momentary relief, but raids soon recommenced, and Archinard, who succeeded to the command in 1888, determined to put an end to the Toucouleur menace from Kaarta and Ségou. He first marched against Ségou in April 1890. Madani fled and Archinard installed a Bambara king with a French resident. He then turned back against Ahmadu at Nioro, but was held up by a stubborn resistance at Ouossébougou. Meanwhile Ahmadu attacked the French line of posts between the Senegal and the Niger, and in September assaulted Koniakory, from which he was driven off. It was not till 1 January 1891 that Nioro was captured, but Ahmadu escaped to Macina, which was subject to a nephew of El Hadj Omar with his capital at Bandiagara. During the next two years Kaarta was thoroughly pacified. Ahmadu, however, continued to give trouble, and in April 1893 Archinard took Dienné by assault. After this Mopti and Bandiagara were peacefully occupied and Macina was subdued. At Douentza on 19 May Captain Blachère inflicted a final defeat on Ahmadu's forces. Ahmadu himself escaped to Nigeria, where he died in the province of Sokoto in 1898.

The French put Ségou under direct rule in 1893, but at Bandiagara they installed Aguibou, a brother of Ahmadu, with a Resident.

Although he welcomed the French occupation and visited Paris in 1900, Aguibou's position was unenviable: the Fulani, who formed a considerable proportion of the population, could not forgive him for being a Toucouleur, and the Toucouleur could not forget that he had deserted his brother. He abdicated in 1902, and from that time Macina has been ruled directly by France.

Timbuktu and Eastward. From the occupation of Macina the next step was naturally the occupation of Timbuktu. Lieutenant Boiteux, leaving his flotilla of gunboats at Kabara, the port on the Niger, entered the city on 16 December 1893. His action was premature, and the land forces under Bonnier and Joffre were not ready to support him. Though the occupation was welcomed by the mass of the inhabitants, the Tuareg, who were then the ruling tribe, attacked the flotilla at Kabara: they were repulsed, but the pursuing column, under Lieutenant Aube, was massacred to a man on 28 December. Worse was to follow. Colonel Bonnier, who had entered the city on 6 January 1894, set out with a column of some 25 officers and 300 tirailleurs to avenge Aube. On the 16th at Tacoubao, not far from Goundam, his camp was rushed at dawn. One European officer, about six European N.C.O.s, and 100 tirailleurs escaped, but Bonnier and all the rest of his troops were killed. However, Joffre, advancing from the west, inflicted a signal defeat on the Tuareg four days later and entered Timbuktu on 9 February. Establishing his headquarters there, he sent out a series of flying columns. By July all the tribes in the immediate neighbourhood had submitted, and in 1895 the Resident at Bandiagara concluded a treaty which brought the Moshi of Yatenga under the protection of France.

The subjection of the Tuareg tribes, however, took some years longer, and it was not until 1900 that the establishment of French garrisons at Gao, Ansongo, Dounzou, and Tillabéry secured the French hold on the Niger valley below Timbuktu. With this, the occupation of the present colony of French Sudan may be considered complete. Penetration farther east belongs to the history of Niger.

Although the country was occupied by the end of the century, and, generally speaking, the peace of French administration was welcomed, the wilder tribes of the Sahara did not readily forsake their old habits of pillage. It was, therefore, necessary to police the caravan routes with camel corps based on Kidal and Araouane. Besides general police work it was their duty during the early years of the century to escort the large salt caravans (*azalai*) from Taoudenni. Gradually, however, routes across the Sahara were becoming safe,

and in 1909 a service of couriers every two months came from In Salah (Algeria) to Gao. From 1908 the Oulimiden Tuareg, who had made their submission at Gao in 1903, gave continual trouble. Failure of the rains in 1913 deprived them of their accustomed pastures for their cattle, and crops for their own food. An unusual move next year north to the valley of the Tilemsi, coupled with the news of French reverses, caused a great deal of unrest in the tribe, and the preaching of a mallam fell on ripe soil. Under their chief Firhoun they rose in revolt, and all the other Tuareg were ready to follow them; but, before the whole country was ablaze, Firhoun was arrested. Condemned at Gao to ten years' imprisonment and twenty years' banishment, he was pardoned by the President of the Republic, and restored to his functions. It is hardly surprising that he raised the standard of revolt again and preached a holy war. He attacked the French post of Menaka, but, after a defeat in May 1916 in which 5,000 camels, 15,000 oxen, and 30,000 sheep were taken and given to the loyal levies, he fled north and was killed by a Targui on 25 June. This was the worst rising in French Sudan during the war, but several minor revolts took place. In more recent years there have been raids on caravans crossing the Sahara, dealt with as they arose by the camel police, but there has been no major political trouble.

Since their occupation, and particularly since 1920, the French have spared no effort to develop the natural resources of French Sudan. While not discouraging European enterprise, they have recognized that the foundation of the colony's prosperity must be native agriculture. Centuries of war and slave raiding have depopulated the country, and the first condition of its economic development is the creation of a native peasantry and the provision of foodstuffs for an increased population. These are the prime objects of the great works undertaken on the Niger.

Government. In the foregoing paragraphs the country described has been termed 'French Sudan' throughout. This has been its common designation from its first connexion with France, but its official title has varied. So from time to time have its area and the form of its government. Changes have occurred with bewildering frequency, and to chronicle each in its place would have served no purpose but to irritate the reader. They have therefore been tabled in Appendix A.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

IN 1937 the 591,122 square miles of the colony were inhabited by 3,635,073 persons, 6.15 per square mile. It has already been observed that the colony includes parts of all the vegetation zones from pure desert to forest, so that the population is by no means evenly spread. A small region of the extreme south-east has a density of almost 50 per square mile, while the utmost north has few or no permanent inhabitants. From the border of French Guinea almost to Timbuktu both banks of the Niger have a fairly numerous agricultural population, and it is reasonable to assume that the completion of the irrigation scheme will result in a considerable increase. Growth up to the present has been slow, the rise in figures from the 2,474,589 of 1921 to those of the last census being mainly due to the transfer in 1933 of 713,167 persons from the old colony of Upper Volta.

Natives. The leading tribes are the Mandingos, numbering about 1,400,000; the Fulani, some 430,000; the Senoufo, some 300,000; and the Habé, some 175,000. Other tribes with more than 100,000 representatives are the Arabs, the Songhaï, and the Tuareg. The Habé, not found elsewhere in the Federation, live in Macina.

In 1936 there were 672 native citizens.

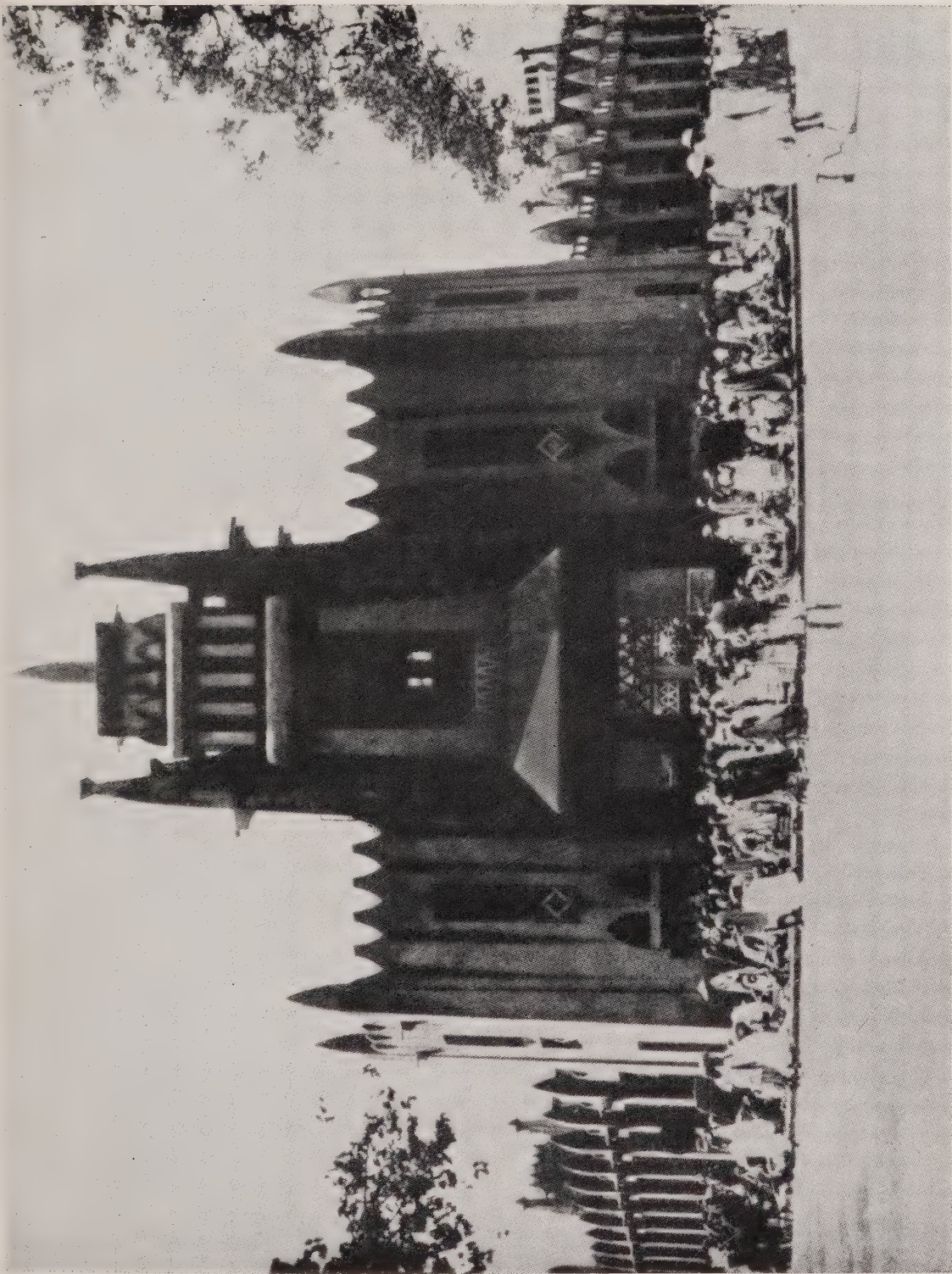
Europeans. In 1937 the Europeans numbered 2,689.

INLAND TOWNS

BAFOULABÉ ($13^{\circ} 48'$; $10^{\circ} 49' W.$). Population, 1,817. District headquarters. Dispensary. Regional School. Weekly market.

Bafoulabé stands on the left bank of the Bafing at its point of confluence with the Bakoy. Originally it was a military post set up by Borgnis-Desbordes, and it was besieged by Ahmadu, son of El Hadj Omar, in 1890. To-day it is of considerable local importance as a route centre and is on the intercolonial road from Dakar (586 miles). The railway, however, crosses the Bafing at Mahina, 4 miles upstream. At this place there is also a landing-ground. A colonial road runs through Mahina to Yatéra (57 miles) and Satadougu (109 miles).

BAMAKO ($12^{\circ} 39'$; $7^{\circ} 58' W.$). Altitude, 1,060 feet. Population, 23,634, including 739 Europeans. Colonial capital. Mixed Commune. Provincial headquarters. Law courts. Chamber of Com-



45. *Bamako: the Market*



46. Dienné

merce. Hospital and maternity home. Barracks. Main meteorological station. Landing-ground. Wireless station. Urban School. Regional School. Protestant mission. Roman Catholic Vicariate Apostolic of the Sudan, mission, and seminary. Orphanage. Bank of West Africa. Power station. Prison. Hotels. Garages. Railway workshops. Cinemas. Race-course. Cycle-racing track. Zoological gardens. Daily market.

Bamako (Fig. 24) may be considered in some sense as the Nairobi of the central Niger. Both were small native villages, and both have proved so successful as route centres of modern transport that they have grown into large and flourishing towns.

History. Late in 1796 Mungo Park left the Niger at Bamako to strike west for the Gambia; but in 1883 it was still a little Bambara village. In the January of that year Borgnis-Desbordes founded a military post there, and to-day a statue commemorates him. Later in 1883 Samory expelled the French, but they soon returned. With the effective pacification of this part of the Sudan, Bamako's position in relation to the Senegal river became evident, and a rough road was built from Bafoulabé. Schemes for a railway envisaged Bamako as an important point, although the line was not actually built until 1924.

Description. The modern town is in two parts. The main town is on the flat plain of the left bank of the Niger. Here are the railway station, the Palais de Justice, the river port, the shops, the warehouses, the native huts, and all the other buildings of an African commercial town. There are avenues lined with trees and some good specimens of Sudanese architecture, notably the Market (Plate 45). About $2\frac{1}{2}$ miles north of the river is a plateau, which is the eastern extremity of the Manding mountains and which overlooks the town. On it has been built the suburb of Koulouba, which contains the Governor's Residence, many government offices, the hospital, and the private houses of the wealthier residents. Both in this suburb and in the main town the natural advantages of the site have been well utilized, and the French may justly be proud of their creation.

In recent years Bamako has become a centre of research in the medical and veterinary sciences. Since 1906 there have been bacteriological laboratories, and work has been done on sleeping-sickness. The Centre d'Études studies and treats leprosy, and the Vaccine Institute does the same for small-pox. The Veterinary School trains prospective members of the veterinary services of the whole Federation.

Bamako is the military headquarters of the Commander-in-Chief of the Sudan.

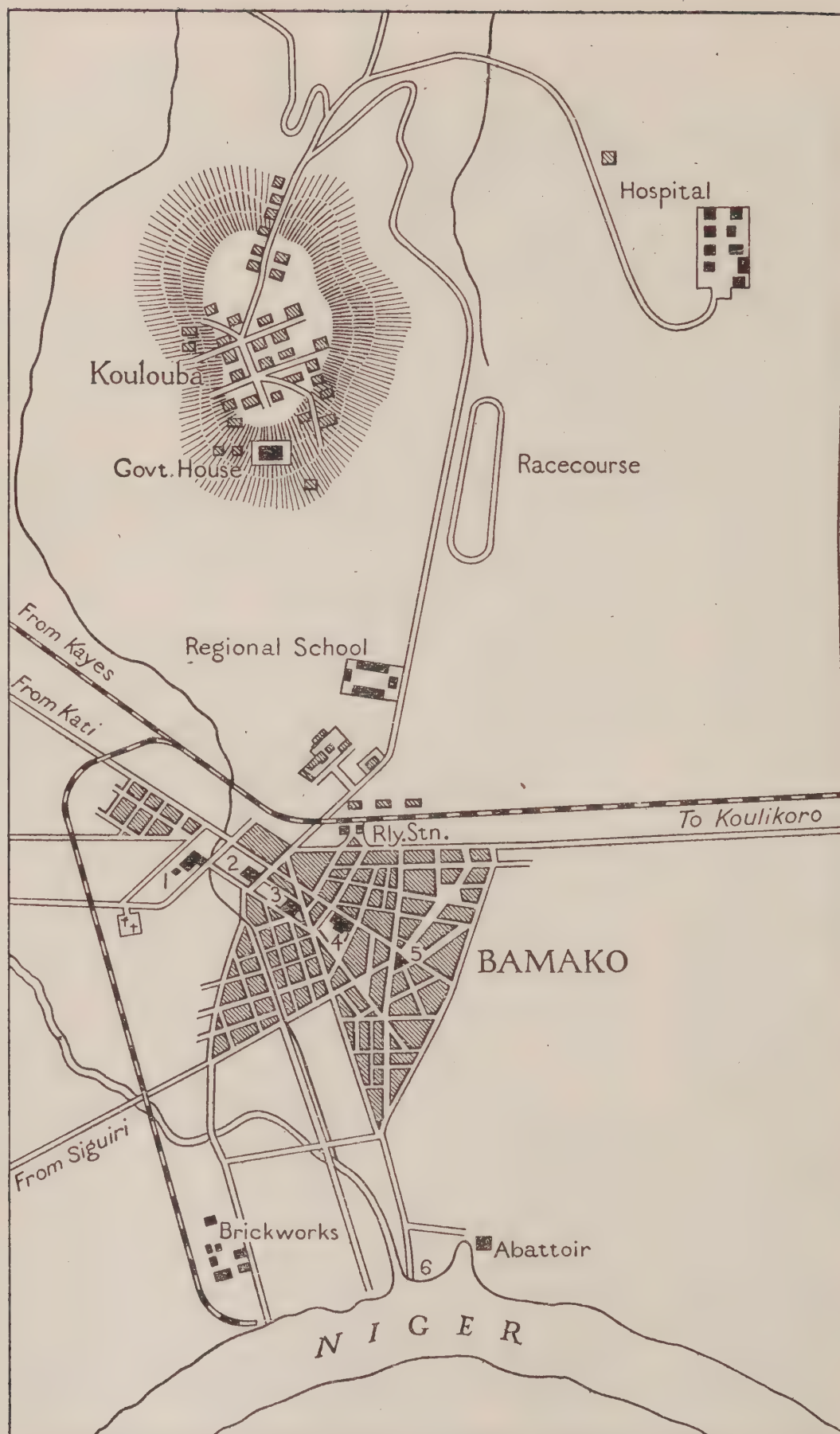


FIG. 24. *Bamako*

1. Prison. 2. Bacteriological laboratory. 3. Orphanage. 4. Law Courts.
5. Market.

Communications. The steamer service between Bamako and Kouroussa and Kankan is described on p. 219. By railway the town is 764 miles from Dakar and 37 miles from Koulikoro. By intercolonial road it is 361 miles from Nayas, 226 miles from Sikasso, and 860 miles from Gao. A colonial road runs along the north bank of the Niger to Koulikoro, 40 miles distant, and another runs to Siguiri (143 miles). In 1939 Bamako was the terminus of an air service to Dakar and of another to Gao. At present it is a stage point on the fortnightly Air France service from Algiers to Dakar.

BOUGOUNI ($11^{\circ} 24'$; $7^{\circ} 30' W.$). Altitude, 1,224 feet. Population, 1,701. Provincial headquarters. Dispensary. Meteorological station. Emergency landing-ground. Regional School. Protestant and Roman Catholic missions. Garage. Weekly market.

Bougouni is primarily a market town for cotton. It is also a considerable route centre, and is where the intercolonial road from Bamako to Sikasso and Bobo Dioulasso crosses the Baoulé by means of a ferry. A colonial road goes south to Man (Ivory Coast), and another south-west to Kankan (French Guinea). The provincial commissioner's house, originally a fort built by General Gouraud, stands on an eminence that dominates the little town.

DIENNÉ ($13^{\circ} 52'$; $4^{\circ} 22' W.$). Altitude, 951 feet. Population, 5,607. Emergency landing-ground. Weekly market.

This Songhaï town (Plate 46) is said to have been founded in 765, and for very many years it was a place of the first importance. From 1468 to 1475 it was besieged by Ali Ber. Two hundred years later it fell to the Fulani of Macina. In January 1828 it was visited by René Caillié, and on 16 December 1893 it was formally and finally occupied by the French.

Its position is between the Niger and its tributary the Bani. To both of these it is joined by navigable channels from the end of July to the end of February. During the same period the colonial road that links it to San is liable to flooding.

Dienné is the home of native handicrafts, and it also has one of the most noted mosques of this part of Africa.

GAO ($16^{\circ} 18'$; $0^{\circ} 08' W.$). Altitude, 866 feet. Population, 8,907, including 124 Europeans. Provincial headquarters. Dispensary. Barracks. Main meteorological station. Airport. Wireless station. Regional School. Hotels. Garage. Daily market.

On the left bank of an exceptionally beautiful curve of the Niger, Gao is the southern terminus of one of the principal routes across the Sahara. It provides one of the comparatively few examples of an old town which has maintained much of its importance up to the present day.

History. The story of Gao as the capital of the Songhai Empire has been told in Volume I, pp. 171-4. Its greatest days were ended with its occupation by Juder in May 1591. Mungo Park passed through it in 1805 and Barth in 1854, and it was occupied by the French in 1896. It still contains the tombs of the Askia kings.

Communications. Gao is the great centre of communications by air, river, and road. It has an airport, $3\frac{1}{2}$ miles south-east of the town, which is second only to that at Dakar, being served by Régie Air Afrique and by Sabena (Vol. I, p. 379). It is where the intercolonial road from Dakar (1,681 miles) to Zinder (860 miles) crosses the Niger by means of a ferry. By Imperial road Gao is 589 miles from Bidon Cinq (Algeria) and 1,405 miles from Colomb Béchar. There is a bus service (p. 225). A colonial road runs along the left bank of the Niger to Timbuktu (253 miles) and Niafouké (357 miles). The steamer services upstream to Koulikoro (813 miles) and downstream to Ansongo (62 miles) are given on p. 218.

KAYES ($14^{\circ} 24'$; $11^{\circ} 27'$ W.). Altitude, 164 feet. Population, 16,405, including 183 Europeans. Mixed Commune. Provincial headquarters. Custom-house. Chamber of Commerce. Hospital and maternity home. Barracks. Police headquarters. Main meteorological station. Landing-ground. Wireless station. Regional School. Roman Catholic mission. Power station. Prison. Hotel. Garages. Railway workshops. Race-course. Daily market.

Like Bamako, Kayes is the creation of France. Indeed, it may almost be described as the creation of the railway (p. 462). It is on the left bank of the Senegal and is the extreme limit of steamer navigation. It is thus a big river port, as goods from the middle Niger are transferred from railway trucks to barges. By river it is 603 miles from St. Louis.

There is a certain amount of minor industrial activity such as kapok ginning, tanning, and ice-making; but the railway workshops employ more men than any other concern. Fortnightly cattle markets are held from December to April in the right-bank suburb of Kayes N'Di. This is connected to the main town by a causeway (Plate 47) that is covered by water in the flood season.

Kayes Ville station is $455\frac{1}{2}$ miles from Dakar by railway and $308\frac{1}{2}$ miles from Bamako, while by intercolonial road the respective distances from Kayes are 515 miles and 306 miles. A track joins Kayes N'Di to Koniakory, 34 miles distant. In 1939 Kayes was regularly served by the Air France service from Dakar and Tambacounda to Bamako.

Electric power is generated by local waterfalls.

MOPTI ($14^{\circ} 29'$; $4^{\circ} 12' W.$). Altitude, 906 feet. Population, 4,994. Mixed Commune. Provincial headquarters. Medical post and maternity home. Meteorological station. Landing-ground. Protestant mission. Hotel. Garage. Weekly market.

Mopti is on the right bank of the Bani immediately above its confluence with the Niger. The town itself is built on three islands set in the midst of marsh and linked by embankments. In the flood season it is entirely surrounded by water except for the causeway to the east. There are very few European inhabitants, and it has a large mosque.

Its chief *raison d'être* is as a river port and as a market town for Macina.

As Fig. 19 indicates, Mopti is at the apex of a little triangle of intercolonial roads. It is 452 miles from Bamako and 408 miles from Gao. By river it is 313 miles from Koulikoro and 500 miles from Gao.

In normal times the Régie Air Afrique's weekly service from Gao to Bamako calls at Mopti. The landing-ground is $7\frac{1}{2}$ miles east of the town.

SAN ($13^{\circ} 19'$; $4^{\circ} 59' W.$). Altitude, 991 feet. Population, 4,985. Provincial headquarters. Medical post and maternity home. Emergency landing-ground. Regional School. Protestant mission. Garage. Weekly market.

Some 5 miles south of the Bani, San is a commercial centre. Ground-nuts, shea butter, and kapok are produced locally; there is a cotton ginnery; and the weekly market does a big trade in livestock.

The medical post provides special facilities for the treatment of sleeping-sickness.

San is on the intercolonial road, being 267 miles from Bamako and 185 miles from Mopti. It is also the northern terminus of a colonial road which goes to Sikasso (182 miles) and to Korhogo (329 miles) in the Ivory Coast.

SÉGOU ($13^{\circ} 27'$; $6^{\circ} 17' W.$). Altitude, 994 feet. Population, 8,370. Provincial headquarters. Medical post and maternity home.

Barracks. Meteorological station. Landing-ground. Roman Catholic mission. Hotel. Garages. Railway workshops. Agricultural experimental station. Weekly market.

Ségou is a river port on the right bank of the Niger.

History. A Bambara town of great antiquity, it was the capital of the kingdom of the same name from 1660 to 1861. In the latter year it was taken by the Fulani, only to fall into the hands of El Hadj Omar in 1862. From 1864 to 1866 Lieutenant Mage and Dr. Quintin were held captive there by Ahmadu. The last named remained in power until he was expelled by Archinard in 1890.

Commerce. To-day Ségou is the administrative centre of the irrigation scheme and the residence of the Director of the Office of the Niger. Trade is done in cotton, livestock, hides, wax, salt, and other commodities. There is a cotton ginnery.

Communications. Steamers from Koulikoro (112 miles) call here on their way to and from Mopti (201 miles) and Ansongo (763 miles). It is the terminus of the 60-cm. railway (p. 222) that runs to Douna (32 miles). The intercolonial road from Bamako (149 miles) runs through Ségou on its way to Mopti (303 miles) and Gao (711 miles). Ségou is on the Régie Air Afrique airline from Gao to Bamako.

SIKASSO ($11^{\circ} 18'$; $5^{\circ} 38' W.$). Altitude, 1,427 feet. Population, 9,824. Provincial headquarters. Medical post and maternity home. Emergency landing-ground. Regional School. Protestant mission. Hotel. Weekly market.

Sikasso is the principal town of the south of the colony, and was formerly the capital of a small native kingdom. In 1888 it successfully withstood a siege by Samory. Ten years later, however, a new king, Babemba, assisted him, and Sikasso was captured by Commandant Pineau on 1 May 1898.

To-day the town is a market for local products and also a route centre. It is on the intercolonial road, being 226 miles from Bamako and 108 miles from Ouagadougou. A colonial road links it to San (182 miles) and to Korhogo (147 miles) in the Ivory Coast.

TIMBUKTU ($16^{\circ} 48'$; $3^{\circ} 01' W.$). Altitude, 935 feet. Population, 5,224. Provincial headquarters. Medical post and maternity home. Barracks. Emergency landing-ground. Botanical gardens. Weekly market.

The name of Timbuktu still casts its ancient spell over the minds of Englishmen, but, in sandy reality, its glory has departed.

History. Timbuktu was originally the meeting-place of the nomads of the Sahara and the more settled tribes of the Sudan. Here they exchanged the salt, dates, and manufactured goods of the north for grain, kola nuts, and gold. About the year 1100 tents were replaced by straw huts, which were later replaced in their turn by stone houses. Two centuries afterwards the merchants of Dienné made Timbuktu an entrepôt for their trade with Oualata and began to use its port of Kabara. From this time forward it was regularly visited by traders from Egypt, Fezzan, the Draa, Fes, and all Barbary. In 1310 Kankan Musa ordered a new mosque to be built, and Timbuktu soon became a great centre of Moslem learning. Its fame spread beyond the shores of Africa, and the name 'Timboutch' is found on a Catalan map of 1373.

In 1433 it was captured by the Tuareg, and in 1468 it passed into the hands of Ali Ber, the Songhaï emperor. He lived there until his death in 1492, and under his successors it enjoyed a century of high prosperity and affluence.

The riches of Timbuktu offered a powerful attraction to El Mansur, and in May 1591 the city was taken by the Moorish army under Juder. For some twenty-five years the pashas of Timbuktu were nominated by the Sultan of Morocco, but from 1618 onwards this was not so. The nominal suzerainty of Marrakech was thrown off, and the soldiers, like the praetorian guards at Rome, acclaimed or assassinated pashas as they pleased. By the end of the century Timbuktu was paying tribute alternately to the Tuareg of the north and to the Bambaras of Ségou. In 1780 the title of pasha was dropped. In 1800 the town was captured by the Tuareg, in 1813 by the Fulani, and in 1840 by the Toucouleur. During the next fifty years Timbuktu had a succession of different masters, and it was a ruined and half-empty town that yielded to Joffre on 9 February 1894.

Timbuktu was visited by Leo Africanus in 1513. The glowing account that he wrote made the place even more famous; but it was not seen again by a European until Laing reached it in August 1826. This gallant explorer was murdered a month later, and few of his papers survive. In January 1828, however, Caillié made his way there, and was bitterly disappointed at the squalor and ugliness that he saw. Barth spent eight months there in 1854.

The Modern Town. Five miles from the Niger, Timbuktu (Plate 48) is on the very edge of the desert. The decline of the camel caravan trade has had its inevitable effect, and the commerce of to-day is but a pale shadow of its former greatness.

There is still, however, a very important Moslem medersa.

The track to the north, the Ligne du Sel, carries a certain number of animals and of vehicles, but it is not an Imperial road. By colonial road Timbuktu is 104 miles from Niafouké and 253 miles from Gao.

9. ADMINISTRATION

Councils

FRENCH Sudan sends a delegate to the Supreme Council of the French Colonial Empire.

The Executive Council is composed of the Governor, the Secretary-General, the Delegate to the Supreme Council, the Attorney-General, the officer in command of the troops, two citizens, and three subjects. One of the citizens is elected by the Chambers of Commerce and the other by the Chamber of Agriculture and Industry, each for a term of two years. The subjects are elected, also for a term of two years, by a native electoral college. The Standing Committee consists of the Secretary-General, the Attorney-General, one citizen, and one subject.

Territorial Divisions

For administrative purposes the colony is divided into provinces (Fig. 25), some of them subdivided into districts. In 1937, by the abolition of the old provinces of Bafoulabé, Gourma, Macina, and Nara, their number was reduced to 17, all but one taking their names from their headquarters towns. These, with the names of their district headquarters towns, are as follows:

<i>Province and headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Bamako	20,791	Koulikoro, Kolokani, Mourdiah
Bougouni	14,959	..
Gao	55,985	Ansongo, Menaka, Kidal, Bourem
Goundam	21,545	..
Issaber (<i>headquarters</i> Niafouké) .	8,849	
Kayes	22,488	Bafoulabé
Kita	15,058	Baninko ..
Koutiala	10,711	..
Mopti	23,002	Dienné, Bandiagara, Douentza
Néma	116,816	Timebédra, Nara
Nioro	19,305	Yelimané
Ouahigouya	10,525	..
San	8,280	..
Ségou	22,780	Ké-Macina
Sikasso	7,761	..
Timbuktu	208,923	Gourma-Rarous
Tougan	3,344	Nouna



47. *Kayes: the causeway to Kayes N'Di*



48. *Timbuktu*

The enormous size of Timbuktu is outstanding. It is more than twice the area of the Gold Coast and almost that of metropolitan France.

In the majority of the provinces there are Councils of Notables.



FIG. 25. *French Sudan: Administrative Divisions*

Communes. The towns of Bamako, Kayes, and Mopti are mixed communes. Each is under an administrative officer as mayor, who is advised by a council nominated by the Governor.

Chambers of Commerce, Agriculture, and Industry. There are two Chambers of Commerce. The one at Kayes was founded in 1893 and the one at Bamako in 1906. Both were remodelled in 1930. The former serves the basin of the upper Senegal and the western part of

the colony in general, the latter the remainder of the colony. There is also a Chamber of Agriculture and Industry, founded in 1925.

Courts of Law

The Court of Assize, the Tribunal of First Instance, and the Colonial Court of Appeal all sit at Bamako. There are Magistrates' Courts at Gao, Mopti, and Kayes.

Native Organization

There are no survivors of the ancient kingdoms or chiefdoms, and all native chiefs are appointed by the French in the normal manner.

Land Tenure

By the end of 1937 provisional concessions had been granted over an area of 28 square miles and concessions over 42 square miles. By the same date 2,643 certificates of title, covering 114 square miles, had been issued under the immatriculation system, and 86 certificates, covering 2 square miles, under the system of Confirmation of Native Land Rights.

Labour

In 1935 there were, in round figures, 653,000 persons on the forced labour rolls, 4,527,000 man-days were worked, and 396,000 francs paid as redemption money. In 1936, 1,000 labourers worked under written contract for European firms, while 8,800 worked under verbal contract. In the public service there were 9,300 labourers employed, of whom only 20 had written agreements.

Agriculture

There is a large experimental station, equipped with laboratories, at Ségou. Minor stations are listed on p. 216.

Native Provident Societies. The first Native Provident Society in the colony was founded at Nara in 1917. For thirteen years it was the only one, but by 1937 there were 17 of them. At first these societies pursued a policy of building up their resources: in 1934, for example, the Bougouni Society's receipts were 239,000 francs and its expenditure 112,700 francs, while at Nara receipts were 474,000 francs and expenditure 137,000 francs. Latterly more enterprise has been shown, and membership grew from 535,515 in 1932 to 1,166,828 in 1937. In that year women were first admitted to membership, with the result that in 1938 the total number of members was almost 2,400,000.

In 1937 the receipts of the societies were 6,310,000 francs (£50,700), of which 1,123,000 francs were provided by members' subscriptions, and their expenditure was 5,600,000 francs (£45,000).

The Office of the Niger. The organization of the Office of the Niger is described below (pp. 211-13). It may be observed here that it is a department of the Federal Government and not under the Governor of French Sudan.

Mining

The following permits were in force on 31 December 1937:

Personal licences	10
The Occupation System	
Exclusive licences	49
Mining licences	20
Concessions	2
Total	81

There were no licences issued under the Royalty System.

Education

The first school in the colony was founded at Kita as long ago as 1882. During the following three years several others were started. Most of the teaching, however, was given by French non-commissioned officers and by interpreters. The enthusiasm of these pedagogues often matched their ability, and the existence of the schools was apt to be ephemeral. Galliéni, on the other hand, who became military governor in 1886, and his successors, Archinard and Trentinian, believed that education must complete the work of conquest, and the founding of schools was actively encouraged. By the end of the century there were some thirty schools, managed either by Government or by missions, educating about 800 children.

In 1938 there were 63 European teachers on the education staff and 200 native. There were 96 Government schools, as follows:

	Schools	Boys	Girls	Total pupils
<i>Primary</i>				
Village Schools	62	6,019	71	6,090
Regional Schools	29	5,947	973	6,920
Urban Schools	3	37	20	57
<i>Higher Primary</i>	1	135	0	135
<i>Technical</i>	1	120	0	120
Totals	96	12,258	1,064	13,322

There were 3 private schools, instructing 251 boys and 29 girls. In 1933, the latest year for which figures are available, there were also 1,188 Moslem schools, giving rudimentary teaching to 7,959 children.

The above takes no account of the training college for teachers at Katibougou near Bamako, of the veterinary college at Bamako, or of the two special Moslem schools (*medersas*) at Timbuktu and Timebédra. All these, though situated in French Sudan, are controlled by the Federal Government and are open to pupils from all the colonies.

As in the other colonies, the educational curriculum has a very practical side. Every school devotes a large part of its teaching to the agriculture or animal husbandry of the district, and many of the school farms are self-supporting. In the regional school at Dienné, for example, the girls in addition to receiving instruction in domestic science conduct a poultry farm. At Bamako there is a special institution devoted to instruction in native arts and crafts.

In 1897 the colony devoted 53,000 francs to its education services: by 1938 this had grown to 4,600,000 francs (£28,200).

Health

In 1938 the European staff consisted of 40 medical officers (including 8 Russian doctors), 10 male and 2 female nurses or hospital attendants, 2 dispensers, and 2 administrative officers. The native staff numbered 37 auxiliary doctors, 2 dispensers, 192 male and 26 female nurses and hospital attendants, 35 midwives, and 4 vaccinators. There were also 54 sanitary inspectors.

There is one major hospital at Bamako, minor hospitals at Kayes, Markala (on the Niger 28 miles below Ségou), and Timbuktu, 30 medical centres in charge of a medical officer, 17 medical posts in charge of a dispenser, and 20 maternity centres. Between them these institutions provide 115 beds for Europeans and 470 for natives.

In addition to the above, which are all staffed by the Health Service, missionaries have ten medical posts.

There are pathological laboratories at Bamako, where there is also the Central Leprosy Institute. This, however, is managed, not by the colony, but by the Federal Government.

There is also a travelling unit which deals with sleeping-sickness.

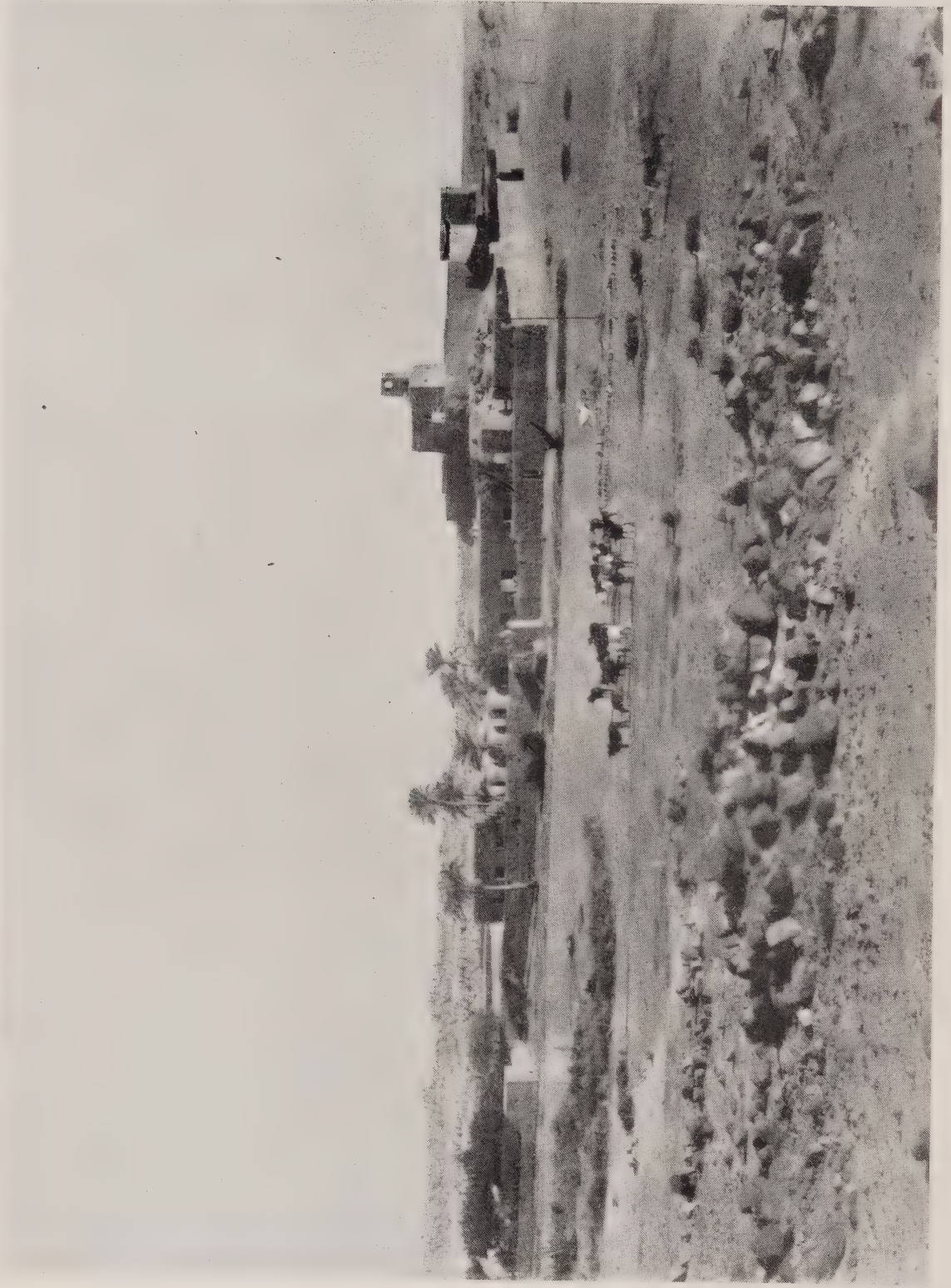
11. MINERALS

Gold

GOLD has long been exploited in Bambouk, especially along the Falémé. All the deposits are placers. They consist of superficial



49. *Bourem*



50. *The fort at Kidal*

auriferous gravels on the plateaux and in the valleys and of deeper accumulations covered by 5–15 feet of laterite crust. The mineralization of the bed-rock, however, is little known. Natives wash the detritus of many of the smaller streams, but the Compagnie des Mines de Falémé-Gambie works the gravels of the Falémé by dredging and drag-line methods. In 1937 this company employed 8 Europeans and 250 natives, the latter principally in cutting wood for fuel. Its average yield was 0.0029 oz. Troy of gold per cubic yard, and production was 207 lb. Troy, valued at 2,000,000 francs. This was about one-tenth of the total production of the colony.

The reserves in sight are estimated at up to 5,000 lb. Troy.

Salt

Terhazza. The trade in salt has always been of great importance throughout West Africa, since vast stretches of the interior have no deposits of this essential commodity. Throughout the Middle Ages the principal source was a sebkra at Terhazza. This place had its houses built entirely of rock salt save for their skin roofs. It was visited and described by El Bekri late in the eleventh century and by Ibn Batuta in 1352. In the late seventeenth century Terhazza declined with the rise of Taoudenni; but in 1828 René Caillié noted several decayed houses built of blocks of salt, and in 1935 some of the ruins were still visible.

Taoudenni. The salt mines of Taoudenni have been famous for many centuries. The sebkra contains three main beds of salt, each about 6 inches thick. They are covered by several feet of gypsiferous clays and underlain by a lower salt-bearing horizon, which is unworkable because of running water. The workings are in the form of open trenches, and the salt is produced in 'bars' of an average size of $45 \times 18 \times 5$ inches and weighing 55–75 lb.

These mines were a source of wealth to the medieval empires of the Mandingos and of Gao; and it was this prize that excited the cupidity of the Moors and led to the destruction of the empire of Gao at their hands. About 1600 the workings were improved by some men from Kidal, who paid one bar in ten to the local chief, while an annual tribute was paid to the chief of the Berabich tribe to ensure the safe passage of the caravans to Timbuktu. This payment was continued up to the French occupation. The miners were dependent on the caravans for supplies, and as late as 1910 fifty-seven persons died of hunger at Taoudenni through the failure of a caravan.

Twice a year throughout the history of the trade caravans have set

out from Timbuktu: in November or December (*grand azalai*) and in April or May (*petit azalai*). In recent years the former has included upwards of a hundred miners on annual contract. The bars of salt form the principal medium of exchange: e.g. in 1923 two bars could purchase 12 lb. of millet or 6 lb. of rice, 48 bars 2 lb. of tea, and 60 bars 50 feet of cotton cloth. The November azalai of that year consisted of more than 2,400 camels and was escorted by 100 native camel troops with 4 European officers. Thirty years previously there had been 20,000 camels carrying nearly 3,000 tons of salt. The trade has suffered severely from the competition of imported salt; but, even so, the spring azalai that returned to Timbuktu in May 1938 consisted of 6,000 camels, bearing 24,000 bars of salt valued at 1,200,000 francs.

Other Minerals

Various other economic minerals exist, but in few cases does exploitation for export seem likely in the near future. The laterites of the Ouahigouya province, however, have given rise to the largest native iron-smelting industry in West Africa, although this trade is now greatly diminished from its former extent. In the Kayes-Nioro-Bafoulabé region, along contacts between intrusive dolerites and calcareous limestones of Ordovician age, there are considerable masses of magnetite. These have an iron content of 54–58 per cent. and are associated with minor bodies of the copper ores malachite and chrysocolla. Non-phosphoric schistose haematites are interstratified with the Ordovician sandstones close to the railway between Kayes and Bamako as well as at numerous more remote localities. Near Bamako there is a deposit of red haematite (umber), suitable for use as a pigment. Small beds of phosphates have been discovered in the Tilemsi valley about 75 miles north of Gao. Bauxites high in alumina are developed at many places south of the 14th parallel, and they have been studied in the Kita district and at Koulouba, the suburb of Bamako. In one quarry, opened to yield rock for the Sansanding scheme, they are seen to have developed from the Niger alluvium. No estimates of the reserves in any of these ore-bodies have been published.

12. AGRICULTURE

MOST of the cultivable part of the colony lies in the sub-desert and millet zones, the latter being larger than the former. Recently, however, such great development has taken place under the auspices of



51. *The Barrage des Aigrettes and the Sotuba Canal*



52. *The Sotuba Canal*



53. *Bamako: the road causeway*

the Office of the Niger that the millet zone is now producing much rice and cotton. Indeed, the Niger irrigation scheme is a most significant fact in the colony's agriculture, and during the next half-century it may well effect an economic revolution.

Outside the irrigated area agriculture is not very highly organized. In the millet zone ground-nuts are grown as a subsistence crop and sisal as an economic one. Maize is common where the rainfall is sufficient.

In the sub-desert zone livestock are important, but farther north the absence of vegetation renders the keeping even of camels almost impossible.

The Niger Irrigation Scheme

History. The scheme for irrigating the central valley of the Niger is largely the work of one man, M. Bélime. In 1919 he and M. Forbes, both of them having had wide experience in cotton growing, investigated this region and presented a report. This report estimated the irrigable area at over 5,000 square miles, but pointed out that two different plans were needed, one for the purely fluvial part of the river and the other for the delta. The former involved the construction of a barrage and an avoiding canal near Bamako, the latter more grandiose works near Sansanding. The whole scheme received the approbation of the Governor-General and the enthusiastic backing of the Association Cotonnière Coloniale, an organization of French textile firms. In 1922 an experimental station and model colony was set up at Niénébalé. In 1924 the Service Générale des Textiles was formed as a government department in French West Africa, to be transformed in the following year into the Service des Travaux d'Irrigations de la Vallée du Niger (S.T.I.N.).

The Sotuba Canal. The simpler fluvial plan was the first to be put into execution. A dam, the Barrage des Aigrettes (Plate 51), was built at Sotuba, $2\frac{1}{2}$ miles below Bamako, and the Sotuba canal was made and allows boats unimpeded passage. This work was finished in 1929, together with its subsidiary channels, and an area on the right bank of some 27 square miles has been successfully brought under cultivation. Fifteen native villages have been built and settled.

The Office of the Niger. The S.T.I.N. was abolished in 1932 and its functions assumed by the Office of the Niger (Vol. I, p. 281). The first Director-General was M. Bélime, and its administrative board at Paris includes representatives of the Association Cotonnière Coloniale. This association supplies seed, machinery, and instructors



FIG. 26. The Niger Irrigation Scheme

to the cotton areas, and also buys the crop as agent for the Government. A minimum price is guaranteed, but a bonus may be given if the state of the world market justifies it.

The Sansanding Dam. In the previous year, 1931, work had been begun on the building of levées below Ségou. These levées restrict the flood-waters and so help to maintain the level of the water behind the new dam. This last was begun in 1932, and it is $7\frac{1}{2}$ miles upstream from Sansanding, above the first distributaries of the delta. The whole plan envisages a dam and three main channels: the Sahel canal, the Macina canal, and the Costes canal. The dam itself was due for completion in 1941. This has been delayed, however, and much of the work is still to be done. It will be broad enough to carry a road and, if required, a railway. The latest (1941) figures state that 309 square miles have now been brought under cultivation.

Finance. The cost of these vast works has been mainly defrayed by loans. It has already been seen (Vol. I, pp. 281, 354) that 3,000,000 francs (£2,000,000) were allocated, and that by the end of 1937 more than half of this sum had already been expended.

Colonization. An essential part of the whole irrigation scheme is the attraction of natives to inhabit the new lands. Villages are being established on plots of 500 acres (200 hectares). Each family has 25 acres, for which it has paid 56 francs (6s. 4d.) per acre and 25 francs (2s. 10d.) per caput. These settlements have proved very successful. The crops grown, principally cotton and rice, are described below.

Since 1937 a private scheme at Diré, covering 7,400 acres, has also shown good results.

Food Crops

Rice. Rice (*Oryza sativa*) is the chief cereal grown in the newly irrigated areas. Due to the rise in the standard of living brought about by European agriculture, it has become an important native food. Some varieties are introduced, such as the American species, locally called *Meréké*. The best local kinds are *badia*, a floating rice, and *fossa*, a whiter rice, which thrives either in swamp or slightly moist ground. Songhaï *tomo* grows on the Niger flood plain in over 3 feet of water and is harvested from canoes. In 1937–1938 there were altogether 214,980 acres under cultivation, producing about 3 tons an acre. The native cleans his rice by soaking it in cold and then in boiling water. The grains swell, bursting the glumes, and they are then dried in the sun and pounded into flour. This is often mixed with honey and eaten as a cake. Ordinary rice is not rich in proteins,

and the polished variety has few vitamins and still fewer proteins. The polishings, however, contain orizanine, which is of great nutritive value.

Millets. In this colony millets are not so important as in Niger. They are, therefore, described on pp. 387-8.

Sweet Potatoes. These are supposed to have been brought into Europe from Central and South America before the common potato of Sir Walter Raleigh's time, and they are grown chiefly in areas which are too dry for yams. The many varieties differ in colour, leaf, form of tuber, yield, and keeping qualities. The red kinds are the original, the white tuber varieties having been introduced later. The cooked flesh of some is dry and mealy; the soft and watery kinds are sweet when cooked; and the largest and coarsest varieties are used only as fodder. Sweet potatoes (*Ipomoea batatas*) are usually planted in ridges. They mature in 3-4 months and are dug up to be eaten boiled or fried in oil. They are of high nutritive value, being rich in vitamins A, B, and C. They also have a high diastase content, which, in cooking, rapidly becomes maltose.

Peas and Beans. The many varieties of the cow-pea (*Vigna unguiculata*) may be cultivated so that one or other is in use throughout the year. They may be prostrate, dwarf, or climbing, and are grown as a pulse, as a vegetable, for fodder, or for green manure. The climbing variety is also used as a cover crop. The natives use the bean chiefly as flour, but also as a vegetable, a paste, or a kind of meal. The horse-eye bean (*Mucuna urens*) is often grown with millet. Two varieties, the Mauritius (*M. aterrima*) and Bengal Velvet Bean (*M. nivea*), make a good cover crop for maize and are less prone to disease than the cow-pea. They also tend to check the growth of lalang grass. Many experimental stations in West Africa have proved that these varieties enrich the soil more than any other pulse, and the French are trying to persuade the natives to grow them instead of the cow-pea. The bean plant is also used as a dye for leather and fibres. The seeds are not only eaten but also are sold as charms, one belief being that a seed will safeguard its owner from having a child suffering from elephantiasis.

Other Subsistence Crops. Maize and manioc are grown considerably as food crops, wheat and hungry rice to a much lesser extent.

Economic Crops

Cotton. If left to himself, the native grows his cotton by scattering the seed on the ground between millet and maize, and thereafter

paying no attention to it. Under government contract, however, he is made to sow American seed and to grow cotton carefully as a separate crop, thus obtaining at least double the yield. The Government, at present, has to subsidize the crop because of the higher price per acre paid for ground-nuts and because of the necessity of planting in four-yearly rotation to maintain the quality. Successful colonization of the newly irrigated areas is ensured by the villagers being given enough land to grow food as well as money crops. The natives provide labour and working cattle and the Association Cotonnière Coloniale provides seed and machinery.

In 1937 the plantation at Diré yielded 1,060 lb. of unginned cotton per acre, giving 350 lb. of good-length fibre, but the average yield per acre for the whole colony was 497 lb. of cotton and 166 lb. of fibre.

Ground-nuts. Because of the availability of railway transport, ground-nuts have been grown for many years. In their export the colony ranks second only to Senegal.

Shea-butter. This tree (*Butyrospermum parkii*) is native to savanna country and so grows almost anywhere in French Sudan. The cultivation of it has been little organized, much fruit is not harvested, and many trees are destroyed by bush fires. Near villages, however, trees thrive. The fruit is edible and resembles a yellow plum. The 'butter' is obtained from the kernels and used as a cooking fat by the natives; when exported, it is used for making margarine and for similar purposes. The colony produces about 3,000 tons annually, more than any other in the Federation. In 1939 plans were announced for plantations in selected regions: seeds were to be sown in lines 33 feet apart, for other crops were to be planted in between.

Silk-cotton Tree. The silk-cotton tree (*Bombax buonopozense*) is of striking beauty by reason of its thick, tulip-like, red flowers which come out when the tree is bare of leaves and make a vivid contrast to the white timber. The fruit is oblong and soft, and, when it bursts, it releases black seeds to which a ball of white fluff is attached. This fluff is the kapok of commerce, but the African variety is not of such a good quality as the East Indian. The tree grows very fast and has a bole length of about 50 feet and a girth of 12 feet. The timber is soft and is little used; for the natives the bark provides tannin, the flowers medicine, and the seeds food.

Hemp-leaved Hibiscus. Hemp-leaved hibiscus (*Hibiscus cannabinus*), called *da* in Mandingo, is both wild and cultivated. It is grown more than any other fibre and is second only to cotton for local needs. The

seeds are fed to chickens and are also used in sauces. The three most useful varieties are grown respectively under water, on areas liable to flooding, and on dry ground.

Gum. A small amount of gum is produced in the driest parts of the colony.

Tamarind. This tree (*Tamarindus indica*) grows particularly well in the southern half of the colony. For the native it has a multitude of uses, the most common of these being as a fruit pulp, a drink, a flavouring, and an antidote to fever. The Fulani use the ashes and pulp for tanning and dyeing goatskins. The tree is a host for nests of a wild silkworm, whose silk is spun into thread used to embroider the clothes of women.

Livestock

Since French Sudan is mainly outside the tsetse belt, livestock are far more numerous than in any other colony. In 1938 there were nearly 5,000,000 sheep and goats. The sheep are fleecy and are found over a large area between Timbuktu and Ségou. Zebu cattle are owned by the Fulani and number 1,270,000. They are not immune to the tsetse and are driven farther into the desert in the rainy season. In the western desert acacia (var. *seyal*) provides excellent fodder for them. Horses are also bred by the Fulani, particularly in Macina, and number 158,000. In some districts donkeys and camels are kept. There are some 33,000 of the latter, few of them south of latitude 17° N. Pigs are almost unknown, as most of the inhabitants are Moslems.

Experimental Stations

The most important agricultural research station is that of Office of the Niger at Ségou. This is for co-ordinating cotton research and has its own experimental stations at Séninnkoura (2 miles east of Ségou), Siguiné, and Diafarabé. On the staff are agricultural chemists, an entomologist, plant breeders, and plant pathologists.

Schools of husbandry are established at Baroueli, El Oualadji, Kakoulou (10 miles south-east of Medine), Mpesoba, Nara, Nioro, Sotuba, and Zambéléla (Zamblara).

13. COMMERCE AND FINANCE

COMMERCE

OFFICIAL statistics of the colony's commerce are invariably combined with those for that of Senegal. Reference should, therefore, be made to pp. 458-9, where the subject is treated as fully as possible.

Firms. The principal trading firms are Chavenel et Fils, the Compagnie Française l'Afrique Occidentale, the Compagnie du Niger Français, Maurel et Prom, Peyrissac et Cie., the Société Commerciale de l'Ouest Africain, the Société Commerciale du Soudan Français, the Société d'Entreprises Africaines, and Teisseire et Cie.

FINANCE

The budget for 1938 balanced at 85,001,000 francs (£521,479), and the published details were as follows:

Revenue

I. Ordinary Revenue	Francs
Direct taxes	53,663,000
Customs and excise	5,167,000
Posts, telegraphs, &c.	7,317,000
Grants and subsidies	12,265,000
Revenue from previous financial years	300,000
II. Extraordinary Revenue	
Sundry receipts	2,257,894
Previous withdrawals from the Reserve Bank	4,031,106
TOTAL	<u>85,001,000</u>

Expenditure

I. Ordinary Expenditure	Francs
Debt charges	475,000
Salaries of administrative staffs	19,518,000
Other administrative charges	5,883,000
Posts, telegraphs, &c. (salaries and wages)	11,407,000
Posts, telegraphs, &c. (plant and materials)	10,225,000
Public works (maintenance and construction)	6,884,000
Social and economic departments (salaries)	9,416,000
Social and economic departments (other expenditure)	6,802,000
Sundry disbursements	8,010,000
Secret funds	5,000
Unforeseen expenses	87,000
II. Extraordinary Expenditure	
Extraordinary expenditure	6,289,000
TOTAL	<u>85,001,000</u>

The usual items of revenue and of expenditure are all present. No indication is given of the objects of the Extraordinary Expenditure.

Many of the natives pay the Moslem taxes of *zekat* and *ashur* instead of the normal poll-tax.

14. COMMUNICATIONS

WATERWAYS

THE steamer services of the Niger have been described in Volume I, pp. 369-70. They are two in number: that from Koulikoro to Ansongo and that from Bamako to Kankan and Kouroussa. Between Bamako and Koulikoro there is a gap, which the railway helps to fill. The service downstream from Ansongo is given on p. 391.

At Koulikoro there are barge building and repairing yards.

Koulikoro and Ansongo. The principal landing-stages and their distances from Koulikoro are as follows:

	<i>Miles</i>		<i>Miles</i>
Koulikoro	0	Niafouké	443
Nyamina	56	El Oualadji	488
Ségou	112	Diré	496
Markala	143	Kabara (for Timbuktu) . .	560
Sansanding	149	Gourma-Rarous	650
Kokry	200	Bamba	685
Ké-Macina	208	Bourem	754
Diafarabé	237	Gao	813
Mopti	313	Ansongo	875

From mid-July to mid-December the following weekly service runs downstream.

Miles

0	Koulikoro	dep. Thursday	3.30 p.m.
112	Ségou	arr. Friday	8.30 a.m.
	Ségou	dep. Friday	10.00 a.m.
143	Markala	arr. Friday	3.00 p.m.
	Markala	*dep. Friday	6.00 p.m.
313	Mopti	arr. Saturday	7.30 p.m.
	Mopti	dep. Saturday	12.00 midnight
496	Diré	arr. Monday	7.00 a.m.
	Diré	dep. Monday	10.00 a.m.
560	Kabara	arr. Monday	7.30 p.m.
	Kabara	dep. Tuesday	8.00 a.m.
813	Gao	arr. Thursday	8.00 a.m.
	Gao	*dep. Friday	7.00 a.m.
875	Ansongo	arr. Sunday	6.00 p.m.

* Change of boat.

The upstream journey is naturally slower, as this time-table shows:

Miles

0	Ansongo	dep. Sunday	6.00 a.m.
62	Gao	arr. Wednesday	12.00 noon
	Gao	*dep. Thursday	12.00 noon
315	Kabara	arr. Sunday	7.00 a.m.
	Kabara	dep. Sunday	1.00 p.m.
379	Diré	arr. Sunday	11.30 p.m.
	Diré	dep. Monday	3.00 a.m.
562	Mopti	arr. Wednesday	2.30 a.m.
	Mopti	dep. Wednesday	10.30 a.m.
732	Markala	arr. Friday	10.00 a.m.
	Markala	*dep. Friday	6.00 p.m.
763	Ségou	arr. Saturday	1.00 a.m.
	Ségou	dep. Saturday	8.00 a.m.
875	Koulikoro	arr. Sunday	2.30 p.m.

* Change of boat.

Bamako and Kouroussa and Kankan. From Bamako it is 99 miles upstream to the border of French Guinea, 131 miles to Siguiiri, and 158 miles to Niandan-Koro. One service goes up the Milo to Kankan (226 miles) and the other up the main stream to Kouroussa (222 miles). A steamer leaves Bamako each Saturday and goes alternately to Kankan and to Kouroussa, in both cases arriving on the Tuesday. The return service takes very little less time. Boats leave the up-river termini on alternate Saturdays, arriving at Bamako every Tuesday.

Kayes and St. Louis. The service between Kayes, Ambidedi (29 miles), and St. Louis (603 miles) has been given in Volume I, p. 367.

RAILWAYS

The only metre-gauge railway in the colony is the eastern half of the Dakar-Niger line. Some account of the history, rolling-stock, and permanent way will be found on pp. 462-5. The itinerary given below starts at Kidira, 396 miles from Dakar.

<i>Distance from Kidira</i>		<i>Elevation</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>	<i>in feet</i>		
0	0	98	KIDIRA (Senegal)	The line crosses the Falémé, the intercolonial boundary, by a bridge of 9 steel spans, each of 82 feet. The line goes in an east-north-easterly direction across rather marshy country. At Ambidedi the Senegal is reached and the
1.5	1	..	..
24	15	..	GOULOMBO	
53	33	..	AMBIDEDI	

<i>Distance from Kidira</i>		<i>Elevation</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>	<i>in feet</i>		
79	49	..	SAMÉ	line curves south-eastwards to follow the left bank of the river (Fig. 27).
96	59½	164	KAYES VILLE	At Kayes, which owes its present size almost entirely to the railway, there are workshops.
98	61	..	KAYES PLATEAU	
101	62½	The Parapah marsh is crossed by a bridge of 3 spans each of 65½ feet. At Medine the line is 2 miles away from the town, which is on the river bank. Connexion is made by means of a 60-cm. light railway. The main line climbs a little to surmount the Bouri plateau. The Dinguira marsh is crossed by a bridge consisting of 4 spans each of 49 feet, the Diamou marsh by a bridge 246 feet long, and the Bagouko marsh by a bridge of 4 spans each of 49 feet. The ravine of the Oussakaran river is bridged by a single span of 131 feet. The Galouko marsh has a bridge of 4 spans each of 49 feet, 59 feet above marsh level.
106	66	..	MEDINE	
111	69	..	KAFFA (halt)	
134	83	..	DINGUIRA	
144	89½	..	DIAMOU	
157	97½	..	BAGOUKO	
171	106	..	GALOUKO	
212	132	..	MAHINA	
233	145	..	KALÉ	
255	158½	..	DILOULÉBA	
270	168	..	OUALIA	The line follows the left bank of the Bakoy for the next 62 miles. There are a few rises over spurs that come down almost to the river. Kenné Ko marsh is crossed by a bridge 164 feet long. The line then goes due south-east and crosses the Bakoy by a bridge of 14 spans each of 82 feet. It is partly supported by an
289	179½	..	BADOUMBÉ	
307	190½	..	..
308	191	..	FANGALA	
333	207	..	..

<i>Distance from Kidira</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
335	208	..	TOUKOTO	island in the middle of the river. The line enters a deep cutting to reach Toukoto, where there is a repair shop. Shortly after this the Kobou-balinde marsh is crossed by a bridge with 2 spans each of 82 feet. The line continues up the right bank of the Bakoy, which is almost waterless during the dry season, until Boulouli. There are numerous steep inclines.
350	217½	..	BADOUGOU	
354	220	745	OOUAKARO	
376	233½	..	BOULOUULI	
387	240½	987	DIALIKÉBAFATA	Leaving Boulouli, the line persists in its south-easterly course, and goes through the plateau of Manambougou by means of a cutting 841 yards long. It then drops down to Kita.
401	249	1,020	KITA	From Kita the line turns sharply east. The Baninko is crossed by a laterite bridge of 2 spans each of 82 feet. There is a gradual rise to Sébékoro. The line then falls gently, crossing many streams by small bridges or culverts and the Baoulé at the village of the same name. It ascends fairly steadily through Dio to the top of the watershed between the Senegal and the Niger basins and then through Kati to the Néré highlands. The line goes through a cutting 766 yards long before descending to Bamako, where there is a repair shop. A siding extends to the quay on the river side.
426	265	..	BANINKO	
434	269½	..	BALANDOUGOU	
463	288	..	SÉBÉKORO	
475	295	1,289	KASSARO	
494	307	..	NAFADIÉ	
507	315	1,066	BAOULÉ (halt)	
531	330	..	NEGALA	
545	338½	..	GUININA (halt)	
556	345½	1,220	DIO	
562	349	..	..
578	359	..	KATI	The line now turns north-east to follow the left bank of the Niger across almost flat country to the latest railhead, Koulikoro, which is 801 miles from Dakar.
582	361½	1,516	..	
592	368	1,060	BAMAKO	
620	385	..	MORIBABOUGOU (halt)	
624	387½	..	TIENFALA	
641	398	..	MASSALA (halt)	
652	405	1,076	KOULIKORO	

A 60-cm. line runs between Ségou and Douna (52 km., 32 miles). When the line from the Ivory Coast is extended northwards, this section will be incorporated in it. No details are available of its construction or rolling-stock. No regular services are run; but in 1930, the last year for which figures were issued, the line carried 29,384 passengers and 5,668 tons of goods.

ROADS

There are in the colony 1,722 miles (2,772 km.) of intercolonial roads, 2,239 miles (3,604 km.) of colonial roads, and 589 miles (948 km.) of an Imperial road, besides desert tracks.

Intercolonial

There are two main routes. One comes from Senegal and goes via Kayes and Bamako to Bougouni and to Bobo Dioulasso in the Ivory Coast. The other comes from French Guinea to Bamako and goes via Ségou to Gao on the Niger and thence south to Ansongo and to Niamey in Niger.

Itineraries. Nayas, on the border of Senegal, is 460 miles from Dakar. The road meets the railway and the Senegal river at Ambidedi (31 miles) and follows the left bank of the latter through Kayes (55 miles) to Bafoulabé (126 miles). The road is very close to the railway, crossing it many times, on to Kita (247 miles), over the Senegal-Niger watershed, and to Kati (352 miles) and Bamako (361 miles), the colonial capital. A ferry takes the road over the river, and the second road bears east to Ségou immediately afterwards. The main road turns south to Bougouni (455 miles) and east to Sikasso (587 miles) and the border of the Ivory Coast (616 miles), 79 miles short of Bobo Dioulasso.

The second road begins at the border of French Guinea, 31 miles from Siguiri, and follows the left bank of the Niger to Bamako (112 miles). Leaving that town, it curves eastward and north-eastward to touch the river again at Ségou (261 miles). After that, however, it turns sharply south-east, accompanying the narrow-gauge railway to Douna (292 miles). It continues in the same direction to Bla (314 miles), but goes a little north of east to San (379 miles) and Mansara (399 miles). It heads for the river again, runs near Dienné, and makes a triangle at the western apex of which stands Mopti (564 miles). Keeping well away from the inland delta of the Niger, the road runs east-north-east to Douentza (709 miles), Hombori (804 miles), Gossi (850 miles), and Gao (972 miles). The last-named town is on the left



54. *The bridge over the Bafing*



55. *A trans-Saharan bus*



56. *The imperial road crossing a ouadi north of Aguelock*



57. *A concrete road bridge*

bank of the river, which has been crossed by means of a ferry. The road follows the river downstream to Ansongo (1,027 miles) and to the border of Niger (1,089 miles), 78 miles above Tillabéry.

Colonial

As can be seen from Fig. 19, the colonial roads mostly centre on three points, Kou-tiala, Bandiagara, and Ouahigouya, from which routes radiate in several directions. There is a set of roads which makes a rough parallel to the second intercolonial road, and there are many connexions with the Ivory Coast. Surfaces range from moderate to bad.

Itineraries. One road starts, in effect, from Mopti and goes through Bandiagara (43 miles) and Koro (106 miles) to Ouahigouya (167 miles). From there a connexion runs south to the border of the Ivory Coast (211 miles), 93 miles north of Ouagadougou. A second connexion runs south-east, circles north round Lake Bama, and turns south-east to the intercolonial border (260 miles), only 25 miles from Kaya.

Another road runs from San south-west to Koutiala (90 miles) and then approximately south to Sikasso (182

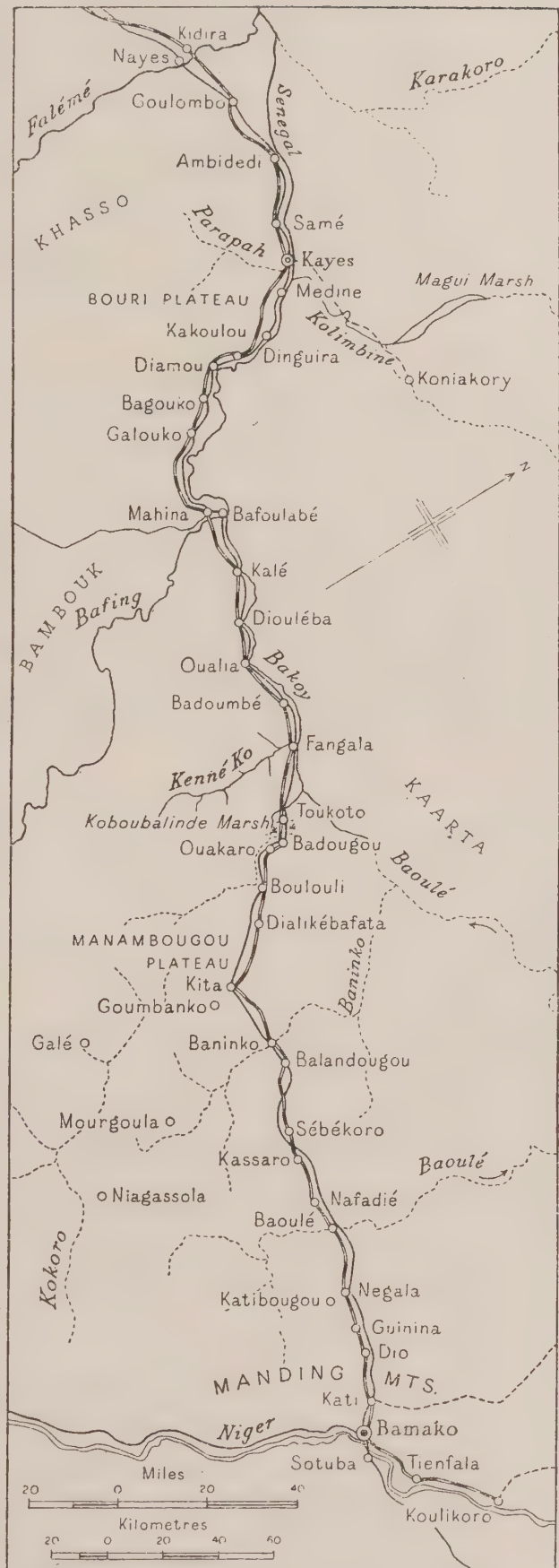


FIG. 27. *River, Rail, and Road from Kayes to Bamako*

miles) and the border of the Ivory Coast (254 miles), 75 miles north of Korhogo. A third runs from Bla via Koutiala (52 miles) and a point 17 miles south-west of Soin (203 miles) to the border of the Ivory Coast (214 miles) and to Dédougou, 10 miles beyond.

One road is somewhat apart from the main network and its surface is poor. This road follows the curve of the left bank of the Niger from Niafouké to Goundam (51 miles), Timbuktu (104 miles), Bamba (217 miles), Bourem (298 miles), and Gao (357 miles).

Imperial

The only Imperial road, the Ligne de Tanezrouft, starts from Gao. At first it runs almost due north to In Tassit (99 miles) and follows the Tilemsi valley as far as Tabankort (137 miles), but from there it strikes north-east to Kidal (236 miles). It then follows a rather circuitous path across to the Tilemsi valley again at Aguelock (334 miles). Thenceforward it goes a little east of north to the turn (435 miles) for Tesalit, 36 miles to the east. Proceeding northwards the road crosses the Algerian frontier (496 miles) to reach Bidon Cinq and ultimately Ain Sefra, respectively 589 and 1,547 miles from Gao.

Desert Tracks

There are two principal desert tracks. One, sometimes called the Ligne du Sel, runs northwards from Timbuktu to Araouane (217 miles) and Taoudenni (533 miles). It crosses into Mauritania and continues by way of El Mreiti to Chegga and Ksar es Souk, respectively, 1,128 and 1,942 miles from Timbuktu.

The other follows a more sinuous course, generally northwards, from Koulikoro to Mourdiah (130 miles). From here another track runs back to Kolokani and Kati, respectively 96 and 161 miles distant. The main track continues its previous direction, with considerable divagations, to Goumbou (169 miles), Nara (190 miles), Néma (324 miles), and Oualata (388 miles). Thence it turns north-west to reach the border of Mauritania (542 miles) and Tichitt, 83 miles beyond.

Bus Services

Niamey (Niger) is the southern terminus of the trans-Saharan route from Colomb Béchar. In normal times the Compagnie Générale Trans-saharienne maintains a weekly service with the following time-table:

Miles

o	Colomb Béchar (Algeria)	dep. Friday
152	Beni Abbès (Algeria)	arr. Saturday
	Beni Abbès	dep. Sunday

<i>Miles</i>		
499	Reggan (Algeria)	arr. Monday
	Reggan	dep. Tuesday
906	Bidon Cinq (Algeria)	arr. Tuesday
	Bidon Cinq	dep. Wednesday
1,161	Aguelock	arr. Wednesday
	Aguelock	dep. Thursday
1,259	Kidal	arr. Thursday
	Kidal	dep. Thursday
1,495	Gao	arr. Thursday
	Gao	dep. Saturday
1,750	Niamey (Niger)	arr. Saturday
o	Niamey (Niger)	dep. Monday
255	Gao	arr. Monday
	Gao	dep. Tuesday
491	Kidal	arr. Tuesday
	Kidal	dep. Tuesday
589	Aguelock	arr. Tuesday
	Aguelock	dep. Wednesday
844	Bidon Cinq (Algeria)	arr. Wednesday
	Bidon Cinq	dep. Thursday
1,251	Reggan (Algeria)	arr. Thursday
	Reggan	dep. Saturday
1,598	Beni Abbès (Algeria)	arr. Saturday
	Beni Abbès	dep. Sunday
1,750	Colomb Béchar (Algeria)	arr. Sunday

Other bus services are given in Table VI. The first five services listed carry mails and only a limited number of passengers.

TABLE VI. *Bus Services*

<i>Route</i>	<i>Service</i>
Bamako-Ségou-San-Mopti	Twice weekly. Journey time: 27-37 hours.
Bamako-Kolokani-Mourdiah-Nara-Néma	Weekly. Journey time: 40 hours.
Bamako-Sikasso-Bobo Dioulasso (Ivory Coast)	Twice weekly. Journey time: 33 hours.
Ségou-Koutiala-Soin-Tougan-Ouahigouya	Weekly. Journey time: 29 hours.
Mopti-Douentza-Hombori-Gao	Weekly. Journey time: 31 hours.
Gao-Ansongo-Niamey (Niger)	Weekly.

SIGNALS

Telegraphs

Telegraph lines run alongside the railways, but they are less dependent on the roads than in other colonies. Apart from those by the railways, the lines are as follows:

Kayes-Nioro-Goumbou-Nara-Niafouké-Timbuktu-Bamba-Bourem-Gao-Ansongo-border of Niger

Nara-Néma

Kita-border of French Guinea

Bamako-Goumbou

Bamako-Ségou-Douna-Bla-San-Mansara-Mopti-Niafounké

Bamako-Bougouni

Border of French Guinea-Bougouni-Sikasso-border of the Ivory Coast

San-Koutiala-Sikasso-border of the Ivory Coast

Mansara-Soin-border of the Ivory Coast

Mopti-Bandiagara-Djibo-border of Niger

Ouahigouya-Ouagadougou-border of the Ivory Coast.

Wireless

There are stations at Aguelock, Araouane, Bamako, Gao, Hombori, Kabara, Kayes, Kidal, Menaka, Néma, Nioro, and Timebédra and in Timetrin. Details are given in Table VII. Bamako, the most powerful station in the Federation, is the only one to do any broadcasting. In 1939 radiotelegrams to France cost 9·75 francs (1s. 5*d.*) a word.

TABLE VII. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length; long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Aguelock Aéradio and Aérogonio . . .	19° 29' N. 0° 50' E.	2 medium 3 short	0·075 and unknown	Aeronautical and direc- tion-finding station.
Araouane	18° 51' N. 3° 33' W.	3 short	0·1	Commercial station. Service to south Al- geria and the interior.
Bamako	12° 39' N. 7° 58' W.	1 long 23 short	150·0 10·0 5·0 0·5 0·35 0·3 0·25	Broadcasting and com- mercial station with services to France, other French African colonies, and the in- terior. Meteorological bulletins.
Bamako	12° 40' N. 8° 05' W.	unknown	unknown	Military station.
Bamako Aéradio and Aérogonio	12° 39' N. 7° 58' W.	2 medium 4 short	0·5 0·4 0·33	Aeronautical and direc- tion-finding station.
Gao	16° 16' N. 0° 07' W.	8 short	0·9 0·5 0·2 0·15	Commercial station. In- terior service. Comuni- cation with motor-car sets on the trans- Saharan route.
Hombori	15° 14' N. 1° 44' W.	3 short	0·01	Commercial station. In- terior service.

Station	Approx. position	Wave-length: long, medium, or short	Power in kilowatts	Owner and remarks
Kabara . . .	16° 41' N. 3° 01' W.	5 short	0.25 0.125 0.1	Commercial station. Service to south Al- geria and the interior.
Kayes . . .	14° 26' N. 11° 26' W.	3 short	0.08	Commercial station. In- terior service.
Kidal . . .	18° 28' N. 1° 21' E.	4 short	0.1 0.0004	Commercial station. In- terior service.
Kidal Aérogonio .	18° 28' N. 1° 21' E.	1 short	0.06	Aeronautical and direc- tion-finding station.
Menaka . . .	15° 53' N. 2° 16' E.	3 short	0.01 unknown	Commercial station. In- terior service.
Néma . . .	16° 32' N. 7° 14' W.	3 short	unknown	Commercial station. In- terior service.
Néma . . .	unknown	1 short	unknown	Military and military air station.
Nioro . . .	15° 14' N. 9° 35' W.	2 short	0.01	Commercial station. In- terior service.
Timebédra . . .	16° 10' N. 8° 11' W.	2 short	unknown	Commercial station. In- terior service.
Timetrin . . .	19° 20' N. 0° 01' W.	1 short	unknown	Military and military air station.

APPENDIX A

Changes in Area and Government

Until 1880 French Sudan formed an integral part of the colony of Senegal, and was administered by the governor of that colony.

1880, Sept. 6. Decree constituting the region of the Upper Senegal a distinct territory under a military officer with the title of *Commandant-supérieur du Haut Fleuve*, subordinate to the Governor of Senegal, but enjoying a considerable measure of administrative freedom. The territory divided from Senegal proper by the river Falémé, but with eastern limits. Medine the headquarters.

1881. Transfer by Col. Borgnis-Desbordes, first commandant, of his headquarters to Kayes.

1890, Aug. 18. Decree changing the title of the territory to *Soudan Français*, and of the officer administering it to *Commandant-supérieur du Soudan Français*. The administration of French Sudan to be under the general direction of the Governor of Senegal, without whose concurrence the Commandant was to take no political action, but he to give his own instructions to all personnel, both civil and military. French Sudan to have its own budget drawn up by the Commandant.

1892, Aug. 27. Decree giving French Sudan complete autonomy, directly under the home government. The Commandant, however, to

address copies of his reports on political matters to the Governor of Senegal, and to keep him posted on the general political situation. The Commandant no longer to be in direct command of the troops, but to devote himself to administration.

- 1893, Nov. 21. Decree substituting civil administration for military. M. Grodet (a civilian) appointed Governor of French Sudan.
- 1895, June 16. Decree constituting the Federal government of French West Africa, under the Governor of Senegal as *ex officio* Governor-General. French Sudan to be administered by a Lieutenant-Governor and to lose the province of Bakel and part of Bambouk to Senegal, and Faranah to French Guinea.
- 1899, Oct. 17. Decree breaking up French Sudan: Dinguiraye, Sigui, Kouroussa, Kankan, Kissidougou, and Beyla incorporated into French Guinea: Koala and Say (re-transferred in 1900) into Dahomey: Odienné, Kong, and Bouna into the Ivory Coast. The remainder divided into (i) two (from 20 December 1900 three) military territories with headquarters at Timbuktu, Bobo Dioulasso, and Zinder respectively; the officers commanding these to be directly responsible to the Governor-General for military matters, but for civil matters to correspond with him through his civil delegate: (ii) the territories of the 'Upper Senegal and Middle Niger' to become a dependency of Senegal administered by a civil delegate of the Governor residing at Kayes. A single budget to be drawn up by the Governor for this territory and the three military territories.
- 1902, Oct. 1. Decree causing the Governor of Senegal to cease to be *ipso facto* Governor-General. 'Upper Senegal and Middle Niger' to become the 'Territories of Senegambia and the Niger', under a permanent delegate resident at Kayes and responsible to the Governor-General. Senegambia and the Niger to have its own budget drawn up by the Governor-General. It to contain a special section devoted to the expenses of the Federal Government, to which all colonies contributed. This to be administered by the Governor-General. The remainder of the budget to be administered under the direction of the Governor-General by the permanent delegate for the civil and first and second military territories, and by the officer commanding the third military territory. The officers commanding the first and second military territories to address their correspondence on civil matters to the permanent delegate, but the officer commanding the third military territory to address the Governor-General direct.
- 1904, Oct. 18. Decree granting the Federation its own budget. French Sudan to become the colony of Upper Senegal and Niger with its

own Lieutenant-Governor, and of exactly the same status as the other colonies of the Federation. The colony to comprise all three military districts, but the third military district to have its own budget annexed to that of the colony. The capital to be transferred to Bamako.

1911. The military territory of the Niger (now Niger Colony) detached from the colony and placed directly under the Governor-General. The other two military districts to cease to exist and to be incorporated for all purposes in the colony.
- 1919, March 1. Decree constituting the Upper Volta colony, and detaching from Upper Senegal and Niger the provinces of Ouahigouya, Ouagadougou, Fada, Say, Gaoua, Bobo Dioulasso, and Dédougou.
- 1920, Dec. 4. Decree restoring to the colony the name of French Sudan (*Soudan Français*).
- 1932, Sept. 5. Decree abolishing the colony of the Upper Volta and restoring to French Sudan the provinces of Ouahigouya, part of Dori, and part of Dédougou.

CHAPTER V

THE IVORY COAST

I. GENERAL

Area: 184,170 square miles. Population (1937): 3,981,459. Density per square mile: 21.62. Capital: Abidjan.

ON some seventeenth-century maps of Africa the shore east of Cape Palmas is marked as 'The Tooth Coast'; but the elephants whose tusks were thus commemorated have long since ceased to be of economic importance. The 'Côte d'Ivoire' of the modern cartographer is no mere coastal strip, but a colony almost as large as Spain. It extends from $4^{\circ} 21' N.$ to $13^{\circ} 56' N.$ and from $8^{\circ} 36' W.$ to $0^{\circ} 17' E.$, and it has an extreme length of 537 miles and an extreme width of 394 miles.

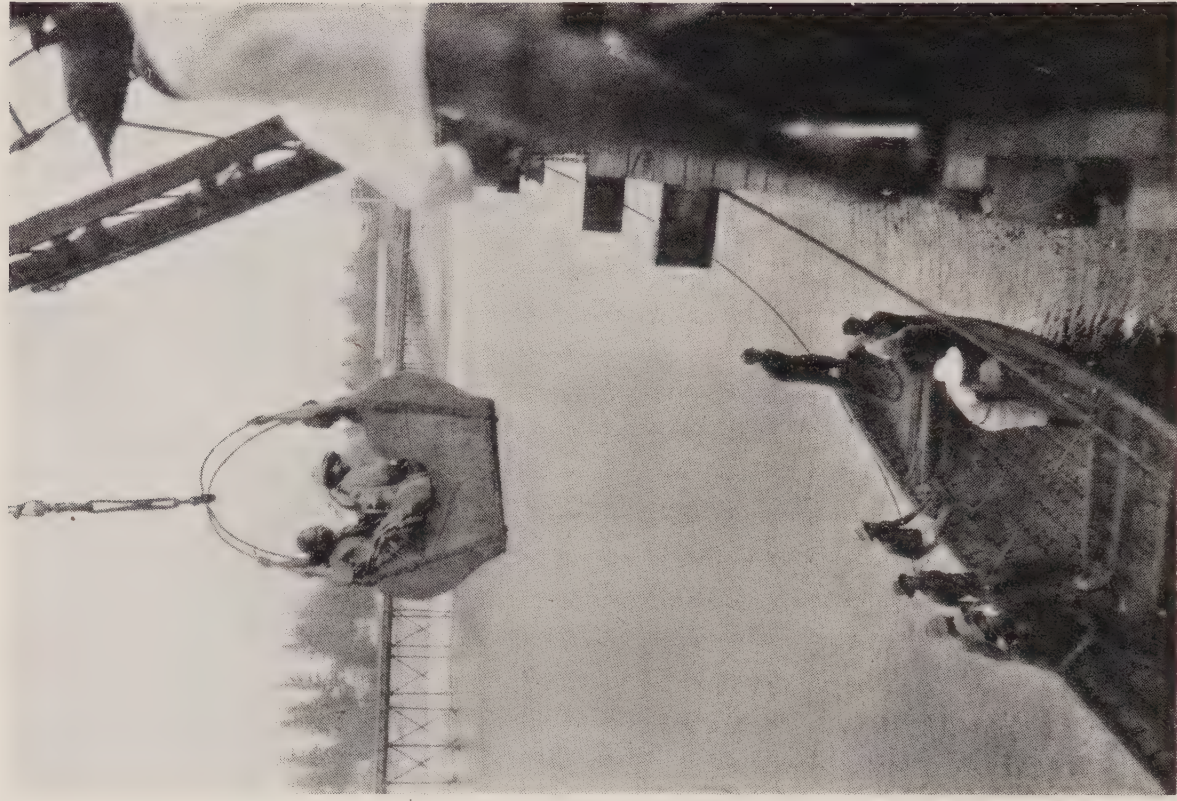
Boundaries. For the last 270 miles of its course the Cavally river forms the Franco-Liberian frontier. Ten miles south-south-east of Toulépleu, however, they part company, and the frontier crosses the watershed to the valley of the Nuon. This river is followed upstream for some 140 miles to its source in the Nimba mountains. This is only 4 or 5 miles short of French Guinea. The boundary with this colony turns sharply east along the lower slopes of the mountains, but it soon resumes its more northerly direction. For many miles it makes use of no physical features except for some 40 miles of the Feredougouba near Touba; but 70 miles north-north-west of that town it strikes the Gwala, following its sinuous course for nearly 100 miles. The boundary then bears north-east to $10^{\circ} 24' N.$, $7^{\circ} 42' W.$, the meeting-point of French Guinea, French Sudan, and the Ivory Coast. From here it runs roughly eastwards until it turns north 10 miles beyond the Korhogo-Sikasso road. It changes direction several times and describes a rough semi-circle before reaching the Black Volta. This river is followed downstream for almost 200 miles, and, after this, the boundary strikes north to a tributary of the White Volta. The valley of this river, though not always its actual course, takes the boundary eastwards for some 50 miles. The latter then runs north-east to $13^{\circ} 56' N.$, $0^{\circ} 48' W.$, the most northerly point of the colony and its junction-point with Niger, and then south-east across the savanna until it is 35 miles south-west of Dori. From here it runs fairly steadily south or south by east to its meeting with French Togo



58. *The Bandama*



59. Rain-forest in the Banco Forest Reserve



60. Landing in a mammy chair

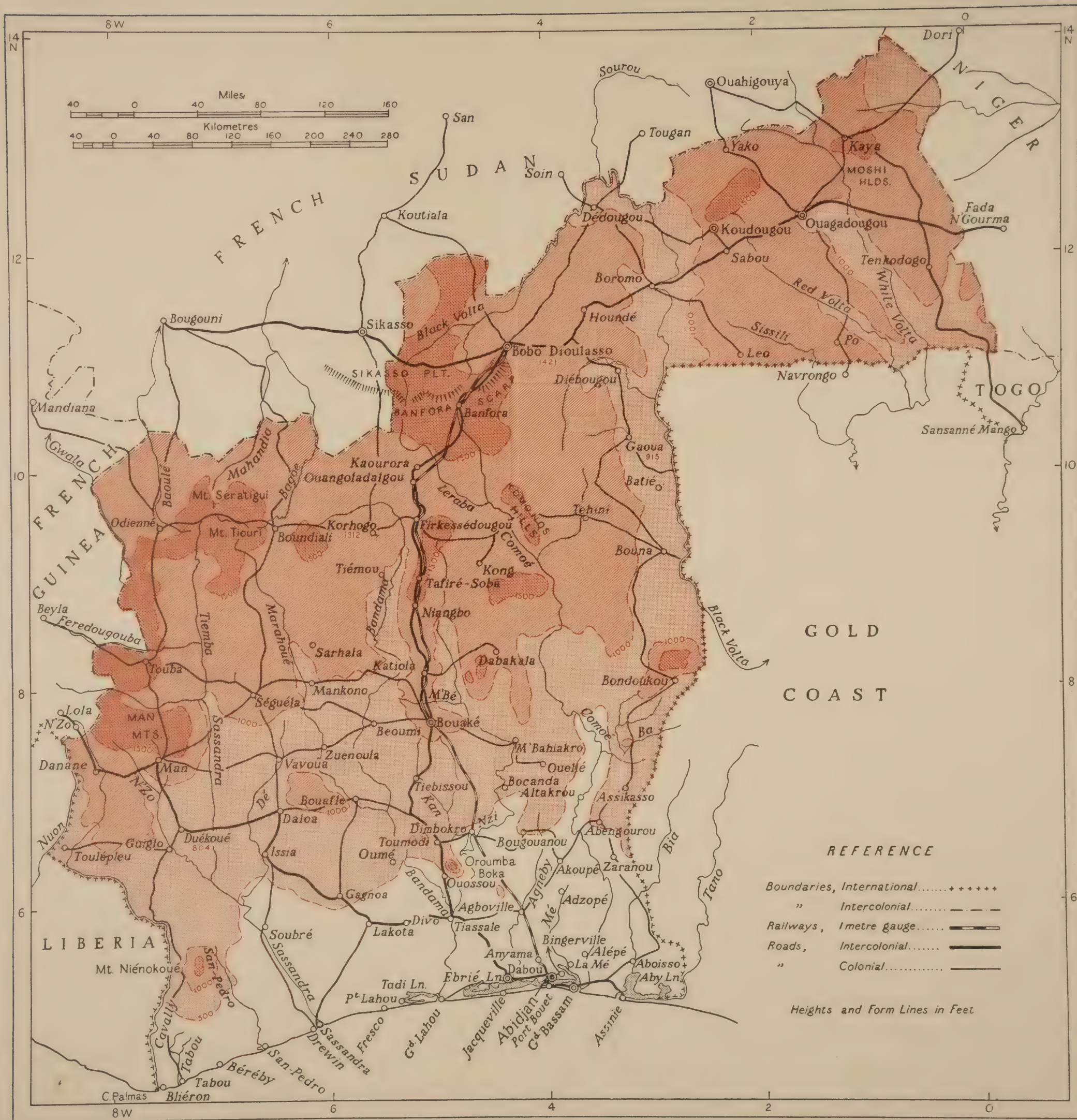


FIG. 28. *The Ivory Coast*

at $11^{\circ} 04' N.$, $0^{\circ} 17' E.$ It then turns sharply to the west-north-west. French Togo, British Togo, the Gold Coast, and the Ivory Coast all meet at $11^{\circ} 10' N.$, $0^{\circ} 09' W.$ From this point the frontier between the last two colonies runs westward in very irregular fashion until it reaches $1^{\circ} 05' W.$ After this it follows the 11th parallel with few variations as far west as $2^{\circ} 51' W.$ Here it returns to the Black Volta, which river forms the frontier downstream for rather more than 200 miles. After that there is a straight section for 38 miles a little east of south. The frontier then runs more south-westerly and takes little notice of natural features. Indeed, for almost the whole of the rest of its course to the coast it consistently ignores and cuts across rivers and hills. At $5^{\circ} 21' N.$, $2^{\circ} 43' W.$, however, it meets the Tano river, and follows it downstream, first south and then west, until it flows into the Ehy lagoon. This is the eastern extension of the Tendo lagoon, and the centre of these two lagoons divides British from French territory as far as $3^{\circ} 07' W.$ Here the frontier turns south by east to meet the gulf of Guinea at $5^{\circ} 06' 30'' N.$, $3^{\circ} 05' 30'' W.$

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2. PHYSICAL DESCRIPTION AND GEOLOGY

THERE is little accentuated relief except near Odienné and Man. Elsewhere the slightly undulating plains are only broken by isolated tors and by the scarp south-west of Bobo Dioulasso. Roughly 90 per cent. of the colony is drained directly to the gulf of Guinea by the Cavally, the Sassandra, the Bandama, the Comoé, and the Volta, which flow in almost parallel valleys. The rest is drained indirectly to the same sea by means of the Niger.

Nine-tenths of the country is made up of gneisses, granites, and other igneous rocks, schists, greenstones, and metamorphic quartzites, all of pre-Cambrian age. The oldest of these are the gneisses and granite-gneisses. They form part of the ancient Archaean shield of West Africa, which had, through long geological ages, been eroded into a rolling peneplain. The schists, greenstones, and quartzites are of late pre-Cambrian (Proterozoic) age and rest discordantly upon the Archaean gneisses. This formation, which is the principal source of

gold, is especially well represented in the east of the colony: it forms a wide belt of country stretching southwards from the province of Bondoukou to the Tertiary sediments of the coast. Although similar rocks outcrop in other districts, they are largely masked, as are the gneisses, by laterite. Despite the comparative flatness of much of the colony, deposits of alluvium are not as widely developed as might be expected. The principal exceptions are the Comoé valley south of the Komonos hills, the Kan and Nzi valleys close to Dimbokro, the N'Zo valley near Guiglo, the Sassandra basin below the Feredougouba confluence, and the Bagoé basin north of Boundiali. Where these clays are homogeneous they are worked for bricks, tiles, and pottery.

The Southern Rivers

The Cavally rises on the Nimba mountains in French Guinea and forms the Liberian frontier for most of its course. Its densely forested valley is separated from that of the N'Zo by a confused ridge of low hills. These are of gneiss and granite, which are the dominant rocks west of the fifth meridian. At its southern end is a prominent peak called Mt. Niénokoué, whose bare summit, rising over 2,500 feet, towers more than 1,000 feet above the lower slopes. The N'Zo rises in the Man mountains (Massif of Dans). Here the harder rocks, usually granites or syenites, have resisted erosion to form the peculiar dome-shaped hills so characteristic of this region. Bare peaks rising more than 3,000 feet dominate the deep forested valleys, and on all sides the massif falls away abruptly to the plains.

The Tiemba, which is the main head-stream of the Sassandra, has its source in the highland area between Odienné and Boundiali. This complex massif also gives birth to the Marahoué (Red Bandama) and to the Baoulé and the Bagoé, headwaters of the Bani in French Sudan. Mt. Seratigui (2,789 ft.) and Mt. Tiouri (2,999 ft.) are the highest peaks. From the Sassandra eastwards to the Gold Coast frontier there is nothing but plains, occasionally broken by tors or small massifs. The two Bandamas, their tributary the Nzi, and the Comoé and its tributaries meander across vast plains which they flood widely each year. Rising in the savanna, they leave it some 200 miles from the coast to carve their way through the tropical forests. Even here, where their fall is less than 4 feet per mile, frequent rapids break them as they flow. Throughout this area lateritization seems to have preceded the appearance of the present type of vegetation, and the laterite has undergone a surface decomposition to a red clay, capped by an acid organic soil. In clearings of the forest a local reversion to

barren laterite is often met with, and large parts of the country are uninhabited. Occasional massifs protrude like islands. Among the most conspicuous are two of 1,378 feet a few miles west of Toumodi, Oroumba Boka (1,650 ft.), 20 miles south-south-west of Dimbokro, and the M'Blibo hills (1,371 ft.), west of Cechi station. There is also an unnamed massif 20 miles north-east of the Ba-Comoé confluence, which rises to 2,300 feet, i.e. over 1,600 feet above the surrounding plains.

The Plains

Northwards from the forest, lateritic plains stretch almost unbroken for 200 miles to the flat divide between the Odienné mountains and the Sikasso plateau and to the scarp which marks the southern edge of that plateau. Occasional granite domes emerge from these plains. These include some between Bouaké and Dabakala, whose highest points are over 2,000 feet, the tors north-west of Bondoukou, the small but prominent hill (2,329 ft.) west of Niangbo, and the rather more extensive Komonos hills. Otherwise, rolling scrub-covered plains reach to the horizon, broken only by the fringing forests which line the shallow watercourses. By the end of the dry season these last are usually no more than a string of stagnant pools; but, when the rains set in, they quickly become flooded. In these savannas a thick sterile crust of laterite continues to form at the present time, and there are large uninhabited stretches. Around the granite tors the rock often disintegrates by desquamation and insolation into a non-lateritized sandy soil akin to the decomposition products of a temperate climate.

The North

The Sikasso plateau lies across the French Sudan border. Its siliceous sandstone is pierced by sills of dolerite which rise here and there over 2,500 feet. A scarp, some 500 feet high, marks the southern and south-eastern edge from the intercolonial boundary to Bobo Dioulasso. The northern slopes are drained by the headwaters of the Black Volta. This great river flows at first north-east, forming a lengthy section of the boundary with French Sudan, and it is not until after its junction with the Sourou that it turns south on its long course to the gulf of Guinea. North of Bobo Dioulasso, its headwaters have left many isolated hills, remnants of the Sikasso-Bandiagara sandstone outcrop; but elsewhere its plains, like those of the Red Volta and the White Volta, conform to type. The general

surface slopes southwards in wide shallow steps, whose edges are marked by rapids on the rivers. Though the region is densely populated the lateritic surface is largely infertile and dries out in the harmattan season. The water-table is deep. In the early months of the year the rivers often dwindle to chains of scattered pools or even fail altogether; but the rains of May soon refill them, and within a few weeks they are in spate. By July, for example, the Black Volta is anything up to $1\frac{1}{2}$ miles wide and 50 feet deep. Wells are rapidly replenished, and for the next 5 months wide depressions form vast marshes.

3. THE COAST

THE colony has a coastline of about 320 miles. The western half is rough and rocky, but the eastern is smooth and sandy. Along the latter the sea has thrown up a strip of sand to form a double coastline, somewhat similar to the 'haff' coast of the southern Baltic. This strip varies in width from a few score yards to three or four miles, and is covered with scrub and with coconut groves. Slopes are steeper on the seaward face. This sand barrier has closed the river mouths and formed a string of lagoons between itself and the original continental shore line. These lagoons, dotted with small islands, are more or less continuous from Petit Lahou to the Gold' Coast frontier. Most of them are narrow, salt, shallow, and with their longer axes parallel to the coast; but a few, which are really the old estuaries, extend some distance inland up the rivers. In the latter, of course, the water is almost fresh; but the salinity varies with the rainfall of the interior. Permanent exits to the sea are only three in number, but in the rainy seasons the river water piles up in the lagoons and may force temporary gaps. The northern shores are still deeply indented with forested bays and rocky peninsulas.

Along the whole coast the principal dangers to shipping are tornadoes, surf, swell, and poor visibility. This last is chiefly encountered when the harmattan ousts the normal south-west wind. Surf is heavy at all seasons and is at its worst in July and November. Only in the more sheltered bays of the west is there protection from it. Elsewhere surf-boats, invariably necessary for landing, are often swamped and frequently cannot put to sea for days at a time.

The predominant current is the Guinea current. This sets easterly throughout the year from longitude 10° W., and has a mean drift of 23 miles per diem. It is strongest from May to July, when, between longitudes 6° and 2° W., the drift averages 44 miles per diem.



61. *Sassandra and Swarton Corner*



62. *The Vridi Canal*

West of Grand Lahou, although a few passable roads lead inland, there are only seasonal tracks connecting the settlements along the shore. The eastern half of the coast is better served.

Cavally River to San-Pedro River

At high water the Cavally river is navigable for 50 miles and at low water for 10 miles less. The first rapids are 80 miles from the mouth.

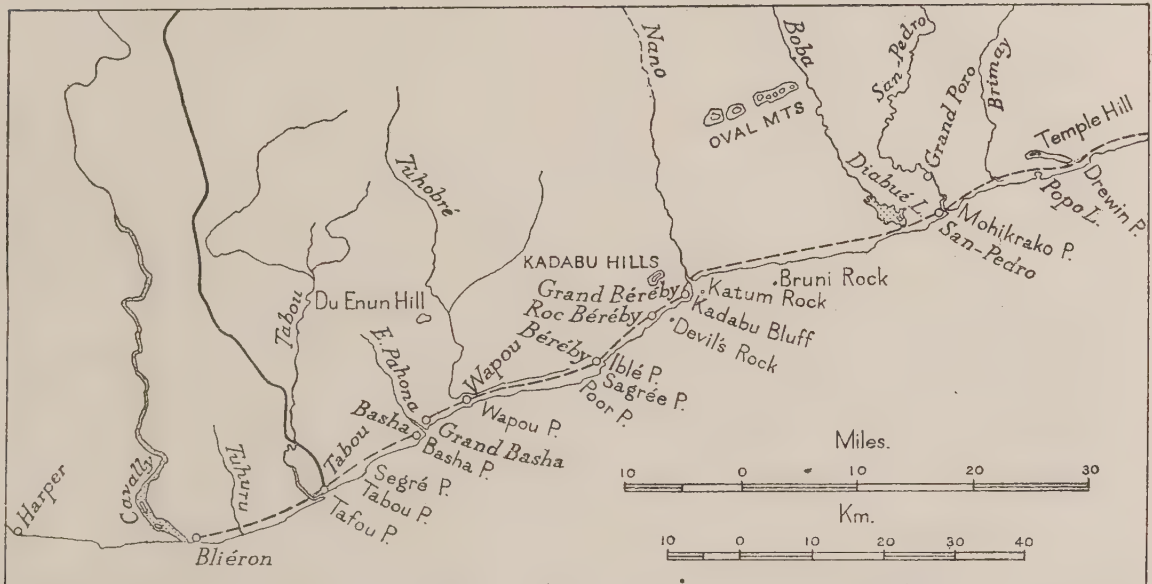


FIG. 29. *The Ivory Coast: Harper to Drewin Point*

The entrance, between sandy banks, is about 300 feet wide, but changes frequently. West of it there are hidden rocks near the shore. The bar is considered the most dangerous on the coast, but, when it is impassable, landing may be effected by surf-boats at Bliéron. This village and its custom-house are $1\frac{1}{2}$ miles east of the river. There is an anchorage in 7 fathoms a mile to the south of it.

For 20 miles from the mouth of the Cavally river the coast is fringed by a sandy beach, backed by dense forest. One and a half miles east of Bliéron is a hill 180 feet high, below which a sandy point with submerged rocks stretches a mile to seaward. East of this a small river, the Tuhuru, flows into the sea. Eleven miles east-north-east of Bliéron is Tafou point, a cliff on which there is a lighthouse. North of the point the Tabou river enters the sea by way of a lagoon, and at this entrance is the port of Tabou (p. 281). The river is navigable only for canoes as far as the first rapids $9\frac{1}{2}$ miles upstream.

From Tabou to Béréby, about 25 miles east-north-east, the coast is broken only by a few low promontories, each with off-lying reefs and rocks. Inland, groves about 350 feet high form landmarks. Tabou

point and Segré point are two insignificant, sandy promontories, respectively $2\frac{3}{4}$ and $3\frac{1}{4}$ miles north-east of Tafou point. There are rocks off both points, the wreck of the *Sénégal* being a stern reminder of the dangers of the coast. Basha point, $4\frac{1}{2}$ miles east-north-east of Segré point, is 50 feet high and rocky. A village of the same name stands on the point. Grand Basha is a mile farther north-north-east at the eastern entrance of a small river, the East Pahona. Basha grove, 4 miles north of the village, and Du Enun hill, 10 miles north, are easily identified.

Wapou point and village lie 5 miles north-east of Basha point and are also fronted by rocks. West of the point the river Tuhobré (Nidia) reaches the coast, but only has an outlet to the sea during the rains. It is connected to a narrow lagoon which continues behind the foreshore for 9 miles to Poor point. The foreshore itself is covered with trees, except where the river has burst through.

Béréby (Petit Béréby, Half Béréby, Béréby Mani) is a village on Sagrée point 2 miles north-east of Poor point. There is good anchorage in 12 fathoms $\frac{1}{2}$ a mile south of Iblé point, which is a mile farther north-east. For $4\frac{1}{2}$ miles along the coast from Iblé point there is a chain of reefs a mile wide, with only a boat passage between it and the shore. Here the coast is formed of sandy beaches separated by rocky promontories.

Roc Béréby (Rocktown Béréby) is a village $5\frac{1}{2}$ miles north-east of Béréby. Eight cables east of the village is Devil's rock, 45 feet high, north-west of which is a sheltered anchorage in $5\frac{1}{2}$ fathoms from which landing is possible.

Two and a half miles north-north-east of Devil's rock stands Kadabu Bluff, with the village of Grand Béréby (Bossa, Yeh) on it. The headland, 120 feet high, affords shelter to a sandy bight bordered by high trees. The Kadabu hills, 310 feet high, are 3 miles west-north-west of Kadabu Bluff, and 16 miles north of it are the Oval mountains, 1,300 feet high. The small river Nano (Nero, Nono) flows into a lagoon in which there is a strong current, owing to its narrow outlet to the bight. South of the lagoon is a cove, terminated at its southern end by Croix rock. This cove is free from surf and slopes gradually, giving safe landing from ships' boats. A mile east of the lagoon, Katum rock, of white granite, rises to a height of 35 feet.

Bruni rock, 33 feet high and $1\frac{1}{4}$ miles off shore, is conspicuous 8 miles east of Kadabu Bluff. Eight miles farther still is Tahou point, a low wooded promontory. Reefs and breakers render it unapproachable, but small boats can land a little north of it. Between the point

and the San-Pedro (Yé or Hé) river 6 miles eastward the small, muddy Boba river has no exit other than into the Diabué (Niébé) lagoon.

Mohikrako point, a rocky peninsula surmounted by a stone pyramid, is at the southern entrance to the San-Pedro river. Immediately westward is a hill, 260 feet high, on which is San-Pedro Residency. The chief village in the vicinity is Grand Poro, 4 miles upriver. The river entrance is 50 feet wide, but the narrow channel is only 6 feet deep. There is a landing-place in a cove on the south bank just above Mohikrako point.

San-Pedro River to Grand Lahou

From here the coastline gradually changes, the next 11 miles being fringed by low cliffs. Five miles north-east of the San-Pedro river mouth the Brimay river reaches the coast, but it has no visible outlet to the sea. The end of its eastern bank is marked by a conical hill. Three miles farther east a wide gap in the coastline marks the entrance to Popo lagoon. East of here the cliffs become steeper and the immediate hinterland higher and more broken. Temple hill, 500 feet high and about 4 miles long, slopes south-eastwards to the coast. A mile north-east is Drewin (Monoho) point, a bold, wooded headland 63 feet high. From Temple hill a range of hills called the Hautes Terres de Drewin extends as far as the Sassandra, 27 miles along the coast. This range is mostly 400–500 feet in height and is intersected by valleys, down which small streams flow in the rainy seasons. On the shore side the coast is formed by sandy bays, separated by rocky points with off-lying reefs. Victory bay is close north of Drewin point and has a village at the foot of the hills which border it. The bay, however, is encumbered by rocks.

Fifteen miles east-north-east of Victory bay is Petit Drewin bay, very similar in appearance, but identified by a custom-house between two stockaded villages and by a wood 2 miles to the east. Anchorage is possible in 9 fathoms half a mile south of the custom-house, and landing close east of it. Grand Drewin, half-way between Petit Drewin bay and the Sassandra river, is a small commercial centre with several factories. Owing to rocks offshore there is no suitable landing-place or anchorage.

Swarton Corner, a headland 5 miles north-east of Grand Drewin and near the western entrance to the Sassandra river, is the eastern extremity of the coastal range. It is 207 feet high and thickly wooded. There are rocks at its base, but north and south are small coves, of which the northern affords safe landing in its south-western corner

for ships' boats at all seasons. Sassandra lighthouse has been built on the headland at a height of about 110 feet. The entrance to the river is between a sandy isthmus and a sandy spit of land which is exposed only in the dry season. Sassandra (p. 282) is on the neck of the isthmus, and here landing in surf-boats is always possible. The river is greatly obstructed by rocks and rapids, and consequently is only

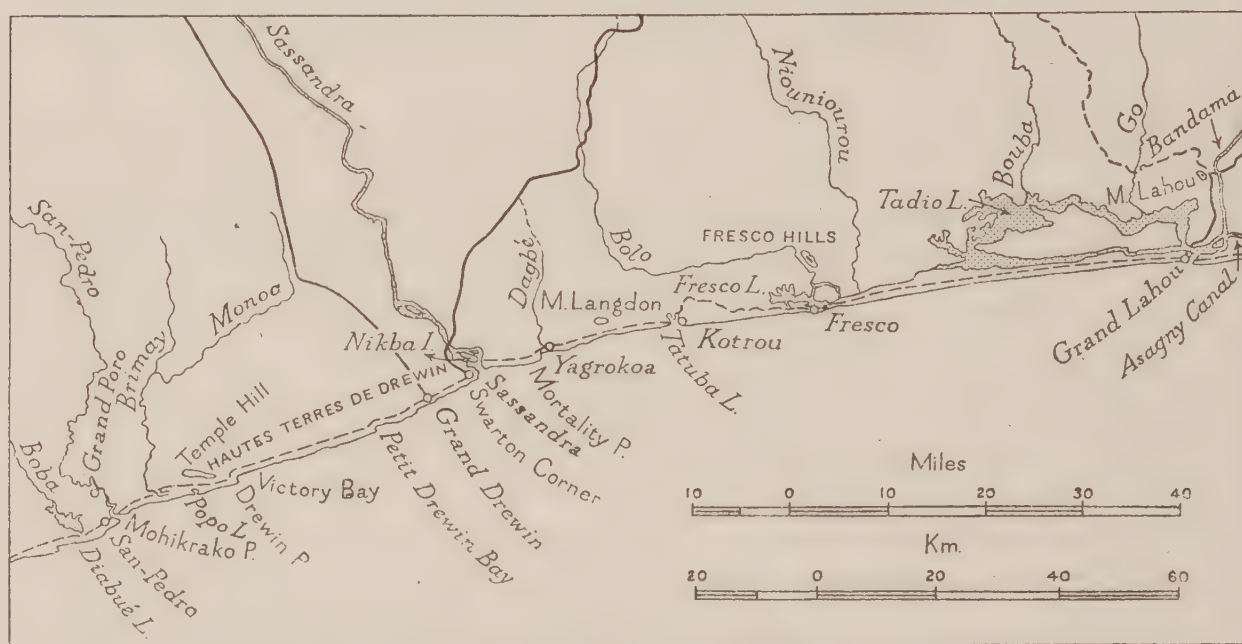


FIG. 30. *The Ivory Coast: Boba River to Grand Lahou*

suitable for canoes. These can ascend to Soubré, 70 miles upstream. Surf-boats can cross the bar into the large lagoon at the river mouth. Nukba (Niafidu) island occupies the greater part of this lagoon.

For a short distance east of the river entrance the shore is low and sandy, but the coast soon resumes its previous aspect of sandy bays separated by rocky points and backed by a range of hills. This stretch has numerous villages and some factories along the shore. There is a landing-place in the shelter of a rocky point at Yagrokoa, east of Mortality (Brouko) point. Here the river Dagbé flows into a small lagoon and can be ascended by canoe for 7 miles. The hills along the coast are about 250 feet high as far as Mount Langdon, which is 100 feet higher. From 3 miles east of here red cliffs front the shore to Fresco, 18 miles to the east.

Kotrou, 7 miles east of Mount Langdon, is the centre of a group of villages, including a custom-house and factories. Canoes ply on two streams which flow into Tatubo (Kétibo) lagoon behind the villages. From Kotrou to Fresco the shore is fringed by rocks the whole way and the beaches alternate between sandy and stony. The hills con-

tinue as far as Fresco lagoon, in front of which Mount Bedford, 230 feet high, makes a striking background to the eastern end of the red cliffs. Fresco village stands on the narrow beach between the sea and the lagoon, whose entrance is closed in the dry season. The Bolo (Bwiko) river flows into the lagoon opposite Fresco and, for 7 miles, is navigable for canoes. Above here the left bank is bordered by the Fresco hills. There is an anchorage off the village. East of it the coast is low and free from rocks as far as Grand Lahou, but surf seldom permits landing on the sandy beach. Several small rivers emerge from the inland forest, the largest being the Niouniourou, which canoes can ascend for 28 miles. There are a few villages on the narrow belt of land between the lagoon and the beach.

Grand Lahou to Port Bouet

Grand Lahou (p. 282) is on the south-east corner of a group of very shallow lagoons formed by the Bandama river, whose mouth is 1 mile east of the town. This group, the north-western end of which is called the Tadio lagoon, is 25 miles long, is parallel to the shore, and is navigable by steamers. In the middle of it is a large island. In the dry season the width of the river is reduced to 200 yards, and at all times there is a dangerous bar and a swift current. The neighbouring roads, river banks, and lagoon shores have numerous villages, Grand Lahou forming their commercial centre. Mount Lahou, 350 feet high, is conspicuous 8 miles north on the right bank of the Bandama river. Although this river is one of the four big rivers of the colony, the volume of water in it is small except in the rainy season. For about 15 days during the flood season it is navigable for 60 miles, as far as Tiassale; for the remainder of this season boats can proceed to Broubou, 38 miles from the lagoon; but during the dry season they can only reach Ahuacre, 12 miles lower down. The entrance is narrow and the bar is dangerous. The Boubo and the Go are two less important rivers flowing into the northern shore of the lagoon.

A colonial road connects Grand Lahou with Dabou. For its first few miles it traverses patches of forest, but it soon reaches more open country. It keeps within 12 miles of the coast all the way and skirts the bays of the Ebrié lagoon. Numerous tracks lead off the road to the actual shores of the lagoon. Dabou, at the head of a bay, is a small town with a post and telegraph office, and is on the intercolonial road from Abidjan to the north.

The Asagny canal, 10 miles long, joins the Bandama river to the

Ebrié lagoon. This is the largest and most important lagoon of them all. It is dotted with wooded islets, and on its northern shore are Abidjan and Bingerville.

The 85 miles of coast between Grand Lahou and Grand Bassam have clean, sandy beaches backed by coconut groves interspersed with villages. Jacquerville (Half Jack), which is almost due south of

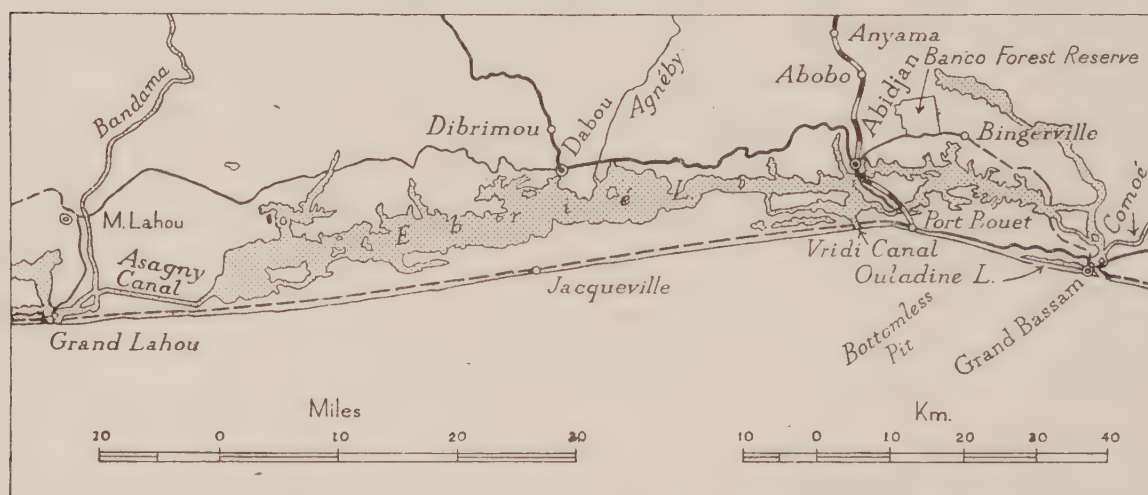


FIG. 31. *The Ivory Coast: Grand Lahou to Grand Bassam*

Dabou, is the most important of these, and has a post and telegraph office, a custom-house, and several factories. A hard, sandy track hugs the shore all the way to Port Bouet and a few lesser tracks connect villages on the beach with others on the southern shore of the lagoon. Depths $\frac{1}{2}$ mile offshore are from 5 to 8 fathoms.

Port Bouet (p. 286) is 31 miles east of Jacquerville. Anchorage is in 16 fathoms 8 cables offshore, on either side of a deep gully called the Bottomless Pit (*Trou sans Fond*), which cuts into the otherwise continuous bank fronting the coast. The greatest depth of this gully is 400 fathoms, and 9 miles offshore it is 4 miles wide. Near the beach its depth decreases to 20 fathoms.

Port Bouet to the Gold Coast Frontier

Port Bouet is connected by rail and road to Abidjan (p. 283). Bingerville, the former capital, stands on the north shore of the Ebrié lagoon, where the depth of water is less than 2 fathoms. As far as the Aby lagoon the coastal belt is low and studded with small lagoons and clumps of palm-trees to a depth of several miles. The country is flat, and farther inland it has cocoa and coffee plantations.

Grand Bassam (p. 287) town is on the narrow spit of land between the Ebrié lagoon and the sea, immediately west of the mouth of the

Comoé river. The port, however, is within a small, shallow arm of the Ouladine lagoon north of the town. It is chiefly used by vessels which trade on the lagoon. The yellow water of the river is noticeable 2 miles east of Grand Bassam and 5 miles out to sea. The Comoé river is one of the few rivers of the Ivory Coast which has succeeded in piercing a permanent opening through the coast, but the bar pre-

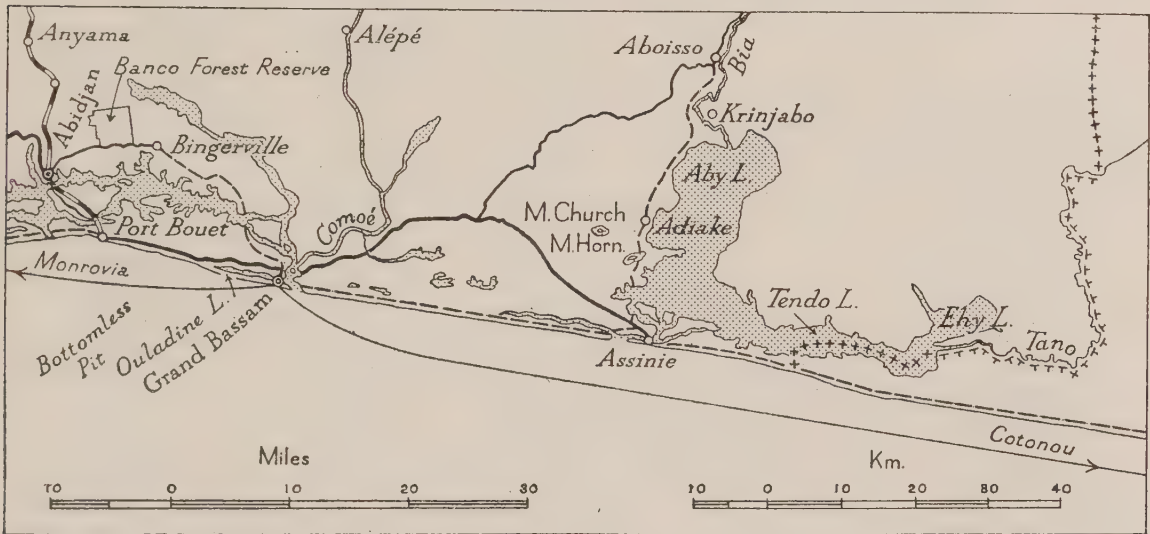


FIG. 32. *The Ivory Coast: Port Bouet to the Gold Coast*

vents ships from entering. During the earlier rainy season the river often rises 20 feet and the current at the mouth runs at 10 miles an hour, but during the main dry season the sea flows into the lagoon.

From the mouth of the Comoé river to Newtown, 43 miles east, the coast remains free from rocks and on the foreshore are numerous villages interspersed with tall trees. A track runs along the coast crossing a canal 4 miles west of Assinie and continuing north through Adiake to Aboisso. The Sueiro da Costa hills come down to the edge of the forest within 5 miles of the coast. The two highest points, Mt. Horn (455 ft.) and Mt. Church (540 ft.) are conspicuous near the south-west corner of the Aby lagoon. This lagoon penetrates 20 miles inland and is drained from its northern end by the Bia (Assinie) river, which flows into the sea close west of Assinie. The Bia also drains the Tendo lagoon, an eastern arm of the Aby lagoon. The bar is often impassable owing to heavy surf, but sometimes boats of 4 feet draught can cross. From the lagoon the river is navigable as far as Aboisso, about 10 miles.

The small port of Assinie (p. 288) stands on a spit of land immediately eastward of the entrance to the Aby lagoon. There is a lighthouse $1\frac{3}{4}$ miles east of the river mouth. The sandy beach continues

for the remaining 12 miles to the international frontier. The eastern shore of the Aby lagoon and the northern shore of the Tendo lagoon have many villages.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	<i>Latitude N.</i>	<i>Longitude W.</i>	<i>Altitude in feet</i>
Kaya	13° 05'	1° 07'	1,010
Ouagadougou	12° 23'	1° 32'	991
Bobo Dioulasso	11° 12'	4° 17'	1,421
Gaoua	10° 19'	3° 10'	915
Odienné	9° 31'	7° 33'	1,457
Firkessédougou	9° 29'	5° 12'	1,102
Bondoukou	8° 02'	2° 45'	857
Bouaké	7° 42'	5° 00'	1,194
Man	7° 24'	7° 33'	1,135
Gagnoa	6° 07'	5° 57'	748
Agboville	5° 56'	4° 14'	203
La Mé	5° 27'	3° 51'	82
Abidjan	5° 19'	4° 01'	65
Port Bouet	5° 15'	3° 56'	19
Grand Bassam	5° 11'	3° 44'	10
Sassandra	4° 56'	6° 04'	112
Tabou	4° 25'	7° 22'	13

THE dominant feature of the climate is the seasonal rainfall. During the first half of the year and with the advance of the south-west winds rain spreads north to give the centre of the colony a wet season of eight months and the north one of five. For the rest of the year very dry cloudless conditions obtain, with north-east winds and a wide range of temperature. In the southern forested lowlands, however, there is no true dry season. Some months have less rain than others, but the most important factor is the combination of constant high temperatures and high relative humidity.

Pressure (Fig. 58)

Only of recent years have any regular barometric records been kept. The pressure equator lies just south of the coast in January, and pressure is then higher in the north. As the low pressure belt advances northwards in the early months of the year, figures decrease slightly in the north and increase in the south behind it. By July they are at their greatest, with a gradient from south to north. In the latter months of the year, as the low pressure belt retreats the figures are reversed until the January position is restored.

TABLE I. *Mean Daily Pressure (1000+millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Ouagadougou . . .	12	11	08	07	09	12	13	12	12	11	10	12	11	6
Bobo Dioulasso . . .	11	10	08	08	09	12	13	12	13	12	11	12	11	5
Abidjan	10	10	09	10	11	13	15	14	14	12	11	11	12	6
Tabou	10	11	10	11	11	14	16	15	14	13	11	11	12	6

Daily variations are as great as the annual changes, and as much as 4 or 5 mb. may separate the maximum readings at 10.00 a.m. and 10.00 p.m. from the minima at 4.00 a.m. and 4.00 p.m. Abnormal variations are very uncommon, but tornadoes cause a temporary fall.

Winds (Fig. 23)

Surface Winds. There are two main wind currents, the monsoon from the south-west and the harmattan from the north-east. The duration of each depends upon the latitude (Fig. 33).

Along the coast the monsoon is dominant all the year. It is strongest and most persistent between June and September, but in other months calms and light variable winds are frequent. In December and January there are occasional periods of two or three days when the harmattan reaches the coast. Although its effects are refreshing for Europeans, the intense evaporation consequent upon its dryness renders the natives more susceptible to infectious diseases.

As the equatorial low-pressure belt moves north, the monsoon advances inland behind it, while the harmattan retires. By March, therefore, the monsoon has taken the place of the harmattan at Bouaké, but it does not reach the latitude of Bobo Dioulasso until April or that of Ouagadougou until May. It is never so firmly established in the north as over the coast, and even in August there are occasional brief irruptions of the harmattan. From September to January, as the monsoon gives way, the harmattan becomes dominant again at Ouagadougou by mid-October, at Bobo Dioulasso by November, and at Bouaké by mid-December.

Speeds are usually between 2 and 6 m.p.h., greater over the savanna than in the forest, and greatest when the monsoon is advancing. Calms are common in every month, and especially between September and February. Winds are stronger in the mornings and afternoons than in the evenings, except along the coast, where sea- and land-breezes introduce modifications. The night land-breeze is weakest when the monsoon is firmly established, and is most in evidence

between November and March. The influence of the sea-breeze, on the other hand, is least in December and January, and greatest from June to September. On most days the wind freshens off the sea about 10.00 a.m. and the afternoon and evening readings average 8 m.p.h.

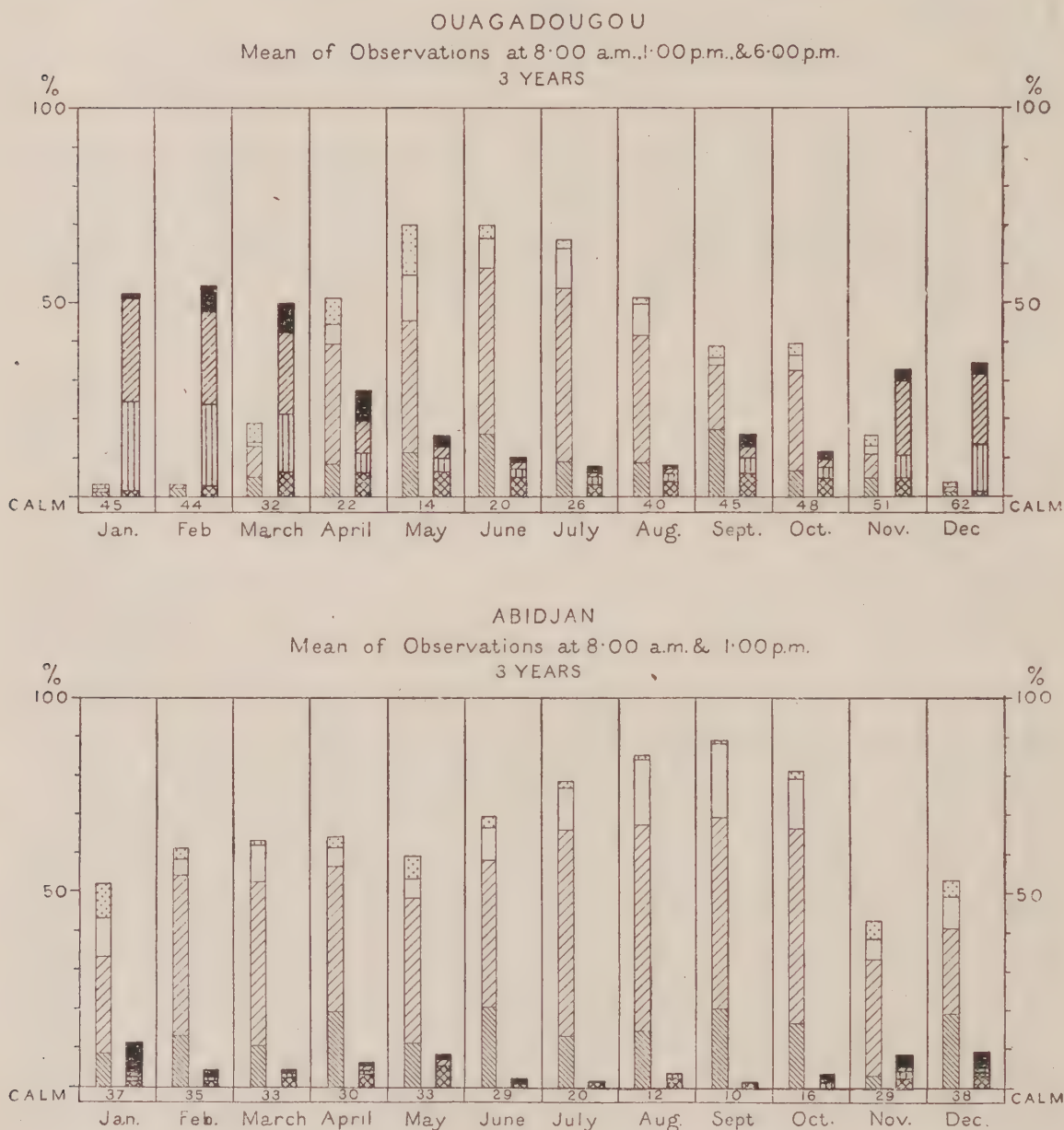


FIG. 33. *The Ivory Coast: Surface Winds.* (For Key see Fig. 6)

All these winds are shallow. The sea- and land-breezes are rarely deeper than 1,500 feet. The harmattan and the monsoon are wedge-shaped, the former thinning from north to south and the latter from south to north. The harmattan is never deeper than 3,000 to 4,000 feet. The monsoon has the same depth as this at its northern edge, that is to say, over the coast in January and over the northern boundary in July, but in the latter month it is at least 10,000 feet deep over the coast.

Tornadoes occur in the wet season. Along the south coast they number less than 20 a year, and there are two maxima, the first about April and the second, a lesser one, in November. Farther north, where there are more of them, these two maxima gradually coalesce until at Ouagadougou, for example, they form a single maximum in July or August.

Upper Winds. Above the various surface currents easterly winds are to be found at all times of the year over the whole colony. Above them again are light westerly winds, of which little is known. In January the easterlies extend above the harmattan to a height of 10,000 feet in the north and 20,000 feet in the south: in July to 30,000 feet and more everywhere. Since they are dry and hazy, they are not easily distinguished from the harmattan, but in the wet season a line of cumulus clouds marks their junction with the monsoon. These easterlies have a normal velocity of 5–15 m.p.h., but winds of much higher speed may occasionally be encountered in their higher levels.

Rainfall, Cloud, and Thunder

Rainfall. Since rain is brought both by the rising air of the equatorial low-pressure belt and by the monsoon, there is rain in every month along the coastal lowlands: farther inland the length of the wet season and the total rainfall decrease northwards. The country is often divided roughly into three belts. South of latitude 8° there are two wetter periods, which occur just after the sun has passed overhead. The main wet season is from mid-March to mid-July: June often has as much rain as the year's total in London, with rain on 20 days or more. July and August are relatively dry, and are followed by a second wet season from September to November. The main dry season lasts from December to March, but is never completely rainless. Annual totals are between 50 and 90 inches.

North of latitude 8° there are only two seasons. Between latitudes 8° and 11° the wet season starts about mid-March or April and lasts until November; north of latitude 11° it starts in April or early May and lasts only until mid-October. The rainfall in these two belts is respectively from 50–60 inches and from 30–40 inches, decreasing generally north-eastwards. At the height of the wet season the rain is in many places as heavy as that of the south, but the dry season is almost rainless.

During May and June rain may fall ceaselessly for two or three days in the forest belt, but otherwise persistent rain is rare. On the

TABLE II. Mean Rainfall

R = Rainfall in inches.

X = Maximum fall in 24 hours.

D = Number of rain-days.

Station	Yrs. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Kaya	10	R	..	0.06	0.31	2.58	4.15	5.59	8.72	5.12	0.59	0.12	0	27.24
		X	0.04	0.18	0.95	1.65	2.19	2.36	3.09	3.14	1.30	0.51	0	3.14
		D	0.1	0.5	1.9	4.9	8.2	10.5	13.4	10.6	2.2	0.5	0	52.9
Bobo Dioulasso	10	R	0.08	1.08	2.09	4.58	4.75	9.84	11.99	8.54	2.51	0.74	0	46.36
		X	0.80	4.85	2.65	2.76	1.44	6.43	6.18	3.24	1.70	3.92	0	6.43
		D	0.1	1.6	3.8	6.4	9.4	10.4	16.0	11.6	6.7	1.6	0	68.1
Odienné	9-10	R	0.03	1.45	3.35	5.38	5.65	11.22	15.00	10.36	5.36	2.14	0.21	60.79
		X	0.30	1.84	1.81	1.87	2.84	6.04	4.88	3.62	2.03	2.02	0.87	6.04
		D	0.1	4.0	5.6	9.5	9.8	13.1	16.7	16.1	11.8	4.7	0.5	92.5
Firkessédougou	9-10	R	0.12	2.12	2.95	6.15	5.56	7.23	10.90	9.50	4.20	1.06	0.25	51.16
		X	0.56	3.32	2.42	4.04	2.34	2.63	4.80	3.39	3.03	1.85	1.14	4.80
		D	0.5	5.1	6.6	10.2	11.3	12.7	17.6	18.7	11.9	3.6	0.9	100.5
Bondoukou	4-5	R	1.60	2.33	5.14	5.50	5.76	3.56	2.38	7.83	7.67	3.16	0.94	46.54
		X	4.22	2.64	1.69	2.18	2.19	2.86	1.66	2.01	2.19	2.54	1.35	4.22
		D	1.2	5.5	8.2	9.8	11.8	5.6	6.6	14.6	15.8	6.2	3.2	90.0
Bouaké	10	R	0.40	4.11	5.79	5.32	5.97	3.16	4.59	8.20	5.24	1.48	0.98	46.71
		X	1.52	2.61	3.36	4.86	2.11	3.70	2.86	5.38	2.32	2.03	1.42	5.38
		D	0.8	3.0	7.1	9.8	10.2	8.2	10.6	14.6	11.2	3.7	2.0	81.2
Man	10	R	0.65	3.37	5.53	7.13	8.68	10.76	10.60	14.26	9.49	4.55	1.17	80.98
		X	1.40	3.21	4.33	3.66	3.90	5.40	6.47	6.70	6.47	3.91	2.14	6.70
		D	1.3	4.4	7.7	10.3	11.4	11.4	15.2	16.5	10.7	5.6	2.4	104.1
Abidjan	10	R	1.59	2.09	3.92	14.15	19.54	8.40	2.14	2.80	6.62	7.93	3.08	77.14
		X	1.92	5.89	2.48	5.57	8.70	10.83	3.75	1.83	4.66	4.08	2.36	10.83
		D	4.0	5.9	8.8	11.3	20.0	12.2	10.8	13.6	18.5	16.3	8.4	148.8
Tabou	10	R	1.52	2.66	3.94	16.42	22.80	6.90	3.89	7.79	8.71	8.67	4.64	92.49
		X	2.61	2.27	2.71	5.56	—	—	4.46	3.31	7.15	5.71	2.37	—
		D	3.9	5.4	8.0	17.1	14.9	9.0	8.9	17.1	15.8	13.3	7.7	128.9

coastal lowlands storms occur at any time of day or night; but farther inland they are usually in the afternoon. Rain is torrential and several inches may fall in 12 hours. Rivers rise with incredible rapidity; bridges disappear and fords become impassable; widespread floods contaminate wells and leave pools to breed mosquitoes; and roads and airfields are put out of action for days and weeks at a time.

Monthly and annual totals vary considerably from year to year. For example the July falls for 1938 and 1939 were respectively 6.41 and 10.75 inches at Ouagadougou, 1.34 and 10.87 inches at Bouaké, 4.53 and 21.49 inches at Abidjan, and 13.98 and 4.53 inches at Tabou. At the last-named place the year's total was 103 inches in 1938 and 69 inches in 1939.

Cloud. The wetter months are naturally cloudier than the drier, and, broadly speaking, there is more cloud in the south than in the north. The forest belt, however, has rather higher figures than the coast. North of Firkessédougou, the dry season is almost cloudless, and, even at the height of the rains, a completely overcast sky is rare. In the southern half of the colony mean figures of cloud cover vary from 5 tenths in the dry season to 9 tenths in the wet, and for the northern half from 3 tenths to 8 tenths.

Daily variations are quite irregular in the south. In the north the evenings of the dry season are slightly cloudier than the mornings, but during the rains the position is reversed. Conditions are often like those of a fine summer day in England, with clouds massing in the early afternoon and then clearing towards evening. Nights are almost invariably clear, and overcast nights are only common in the south during the wettest months.

Stratus occurs in the early mornings, especially during the wet season, but the most usual cloud is cumulus. Cumulo-nimbus masses at midday to give the rain. Since the equatorial easterlies are a dry continental current, they carry few clouds, but the monsoon cumulus clouds rise into their lower layers. Cirrus often lies at the base of the westerlies.

Thunder. Thunder is a phenomenon usually associated with tornadoes, but it is not always accompanied by high winds. In the forest belt thunder shows a double maximum, the first in April or May and the second between October and December. In the savanna, however, where incidence and intensity are both greater, there is but one maximum. This is between July and September. All through the wet season electric tension is high and interferes greatly with wireless communication.

Temperature and Humidity

Both the annual and the diurnal range of temperature and humidity are very small in the forested south. In the northern savanna greater variations make conditions pleasanter.

Temperature. Maxima occur almost everywhere in March or April, and minima in August, although the lowest night temperatures are registered during January in many places.

TABLE III. Means of Daily Maximum and Minimum Temperatures

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Ouagadougou .	97	102	106	107	93	97	93	89	92	100	102	98	99	18
	58	61	70	76	77	74	72	70	70	72	66	60	69	19
Bobo Dioulasso	94	98	101	101	96	91	87	85	88	93	95	95	94	16
	60	62	69	72	71	71	70	69	69	69	67	62	68	12
Odienné .	91	95	97	94	90	90	86	85	87	89	91	91	91	12
	64	67	71	74	73	71	70	70	69	69	68	63	67	11
Firkessédougou	96	99	99	99	95	92	89	87	88	92	94	96	94	12
	59	64	71	73	72	70	69	69	69	69	67	61	68	14
Bouaké . .	92	94	95	95	91	87	85	84	86	88	90	91	90	11
	69	71	71	71	71	70	69	69	69	69	69	69	71	2
Agboville .	87	90	92	93	89	86	84	83	84	85	86	87	87	10
	71	73	73	73	73	73	71	70	71	73	72	72	72	3
Abidjan . .	89	91	91	90	89	85	83	82	83	85	87	89	87	9
	73	75	75	75	75	73	72	71	73	74	74	74	74	4
Tabou . .	87	87	88	89	86	84	82	81	82	84	85	86	85	8
	73	74	74	74	74	74	73	72	72	73	74	74	73	2

In the coastal lowlands the hottest season is from December to April, and August is the coolest month, but maxima only vary through the year between 80° and 90°, and minima from 68° to 73°. Sea-breezes benefit coastal stations, and in the forest transpiration lowers temperatures slightly.

In the northern half of the colony the hottest months are April and May, just before the rains. A second and lesser maximum is experienced in November. Maxima rise above 100° at the end of the dry season, and, with minima falling to 60°, there is a considerable diurnal range. Absolute screen figures at this season are in the neighbourhood of 115° and 50°, and outside the screen the range may be 10° or 20° greater. Nights are relatively fresh and cool. In the wet season mean daily temperatures vary only from 90° to 70°, and absolutes also show a smaller range. Maxima occur at about 2.00 p.m. and minima just before dawn. In the south temporary and irregular variations are rare and slight. In the north tornadoes lower the temperatures by several degrees, as does the onset of rain.

Humidity. Vapour pressure is always high along the coast and over the forest, and the relative humidity shows little variation. Figures such as those for Bouaké and Tabou indicate that the air is highly charged with moisture both by day and night.

TABLE IV. *Mean Relative Humidity (percentages)*

Two observations: 8.00 a.m. and 6.00 p.m. Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Ouagadougou .	42	39	39	50	64	72	81	87	83	70	49	51	61	48
	14	12	16	25	39	47	57	64	57	38	22	14	34	52
	22	18	19	28	42	50	64	73	71	52	36	29	42	55
Bobo Dioulasso .	45	46	54	64	74	81	88	91	89	79	65	54	69	46
	23	25	27	37	50	61	73	81	79	66	46	29	49	58
Firkessédougou .	64	64	73	75	81	83	86	89	89	87	84	75	79	25
	28	30	44	51	65	69	74	78	80	73	59	37	57	52
Bouaké . . .	80	86	85	86	89	91	91	92	92	92	90	84	88	12
	38	44	48	55	62	66	69	71	71	67	61	49	58	33
	42	46	56	62	73	75	76	76	79	77	73	60	66	37
Agboville . .	92	90	88	87	87	90	89	89	89	88	91	91	89	5
	79	74	74	75	83	85	84	83	85	85	86	84	81	12
Abidjan . . .	92	92	87	85	88	90	87	88	88	88	87	91	89	7
	69	69	65	68	74	77	73	74	75	73	72	70	72	12
	80	81	78	79	82	85	80	82	85	84	83	83	82	7
Tabou	92	94	94	92	93	91	85	88	91	92	92	94	91	9
	76	78	76	75	80	83	77	80	82	82	77	76	79	8
	83	85	83	83	84	86	81	84	87	88	84	83	84	7

In the centre and north both the annual and diurnal ranges are greater. Means such as those of Ouagadougou in the dry season include days when, under the harmattan, humidity is distressingly low. Although the mean relative humidity is never as high as on the coast even in August, 'muggy' days are then fairly frequent.

Visibility

At the surface visibility is worst in the south-west, and there is a general improvement eastwards and northwards. At Tabou the annual means are about 6 miles for all times of day; at Abidjan the mean is 8 miles at 8.00 a.m. and 12 miles in the afternoon; and inland it is between 7 and 11 miles at 8.00 a.m., and from 7 to 18 miles in the afternoon. Visibility is at its best just before and just after the wet season, and at its worst when the harmattan is blowing. Monthly averages of 20 miles in the afternoons of May and October are not uncommon, but at Bouaké, for instance, the 8.00 a.m. January mean is only 2 miles. Almost all the observations of poor visibility occur between October and March as a result of early morning fog, which is common over low ground at that time of year. It does not persist,

TABLE V. *Extent of Surface Visibility*

Percentages of all observations

<i>Station</i>	<i>Year</i>	8.00 a.m.				1.00 p.m.				6.00 p.m.			
		<2½ mls.	2½-12½ mls.	12½-31 mls.	>31 mls.	<2½ mls.	2½-12½ mls.	12½-31 mls.	>31 mls.	<2½ mls.	2½-12½ mls.	12½-31 mls.	>31 mls.
Ouagadougou	1936	7	92	1	0	2	90	8	0	4	93	3	0
	1937	9	80	11	0	2	63	35	0	5.7	74	20	0.3
Bouaké	1937	25	75	0	0	7	90	3	0	20	80	0	0
Abidjan	1936	20	80	0	0	13	87	10	0	5	86	9	0
	1937	12	84	4	0	7	72	19	2	7.7	79	13	0.3
Tabou	1936	5	83	12	0	..	..	..	..	2	86	12	0
	1937	14	86	0	0	6	94	0	0	8	92	0	0

however, after about 10.00 a.m., and rarely rises higher than 1,000 feet.

Temporary but severe deterioration is caused by tornadoes and heavy rainstorms, and by bush fires on the savanna at the end of the dry season, but such effects are local. In the Man mountains interference from low cloud is more general. The dust haze of the equatorial easterlies gives worse visibility than the clearer air of the monsoon.

Swell and Surf

Swell (Appendix II) is almost always light and from the two southern quadrants. Confused swell and calms are most frequent during the main dry season, but as the monsoon develops swell increases, although it is rarely heavy. Surf, on the other hand, is very heavy along the whole length of the colony's exposed coastline, and the rocky headlands of the south-west alone give any protection. Elsewhere the surf is violent enough to hold up lighters for days on end, and it has built a dangerous bar across every river mouth and lagoon outlet.

Meteorological Services

The main meteorological station is at Abidjan, from which synoptic reports are broadcast for the whole Guinea coast. They include information from well-equipped stations at Bouaké and Tabou, and from secondary stations at Agboville, Bondoukou, Firkessédougou, Gagnoa, Man, Odienné, and Sassandra. Other meteorological stations with varying equipment are at Bobo Dioulasso, Gaoua, Ouagadougou, La Mé, and Port Bouet. Their information is not included in the Abidjan broadcasts, but the first three are linked to the French Sudan-Niger network, whose reports are broadcast from Bamako. Until 1931 Grand Bassam was a station of some importance, and rainfall records are kept there and at ten other places. Abidjan, Bouaké, Ouagadougou, and Tabou keep upper-air records.

5. VEGETATION

THE greater part of the colony has a vegetation either of grass-woodland or of rain-forest or its modifications. Most of the grass-woodland belongs to the Guinea subzone. In the extreme north-east there is a very small patch of thornland.

The Grass-woodland

The Sudan Subzone. This occupies the bend of the Black Volta and the country to the east. It is climatically determined and consists of trees, either scattered or in clumps, with brushwood or grasslands between and often underneath the woody plants.

The Guinea Subzone. This covers the whole of the central parts of the colony. The boundary between the grass-woodland and the forest is somewhat irregular. It extends farthest north in the west of the colony, where it runs a little south of Touba, and in the east it is just south of Bondoukou. In the centre it is as far south as Dimbokro. There is no doubt that the grass-woodland as a whole has been much modified by human activity, and over nearly all the area shifting cultivation and the periodic firing of brushwood and grassland have left their mark on the vegetation. Probably much of this subzone was formerly covered with closed forests, which were not, however, for the most part typical rain-forest. Be that as it may, to-day cultivated areas alternate with areas of high dense grasslands interspersed with trees. Such trees, either in groups or as isolated individuals, often project very little above the grasses when the latter reach their maximum at flowering time. The density of the tree growth varies considerably. Sometimes the tree element is dominant, and there results a rather open forest or 'savanna forest'; but most often the grass covering is dense, tall, and continuous. Travellers have to keep to paths and tracks, and, when the grasses are in full growth, views over the country are difficult to obtain. Fringing forests along the rivers and streams are particularly well developed, frequently being dense and tall.

The Coastal Subzone. There is also a narrow belt of coastal grass-woodland a little inland from the shore.

The Forest

The Dense Forest. The dense forest is very typically developed in the southern part of the colony, and the general description given in Volume I, pp. 86-96, will apply to it without modification. The most interesting matter for regional consideration is the distinction between evergreen rain-forest and mixed deciduous forest. In so far as the two types can be clearly distinguished, the evergreen forest occupies the southern, eastern, and western parts of the dense forest and the mixed deciduous forest the northern parts: but the latter has a considerable southern extension in the centre of the colony. There is a marked correlation between this distribution, the annual rainfall,

and the length of the dry season. The full rain-forest is only found where the rainfall is over 64 inches and where the dry season lasts less than two months.

This and other correlations suggested by other investigators cannot be applied too closely, however, for other factors play a part in controlling forest distribution. Of these deforestation by man is the most important. The southern extension of the grass-woodland mentioned above, which forms a broad irregular bay in the dense forest belt, is probably due in part to greater forest destruction associated with denser human population. Again, there is, in general, no sharp distinction between evergreen rain-forest and mixed deciduous forest. A broad transition belt exists, in which the number of evergreen trees gradually and almost imperceptibly increases from north to south. In part the change is a floristic one, deciduous kinds of trees being replaced by evergreen kinds; but in part it is due to a different reaction of the same plastic species.

The dense forest is extremely well developed in the montane area west and north-west of Man. Both on the lower slopes and in the valleys there is an almost inextricable mixture of evergreen and deciduous forests.

Other Types of Forest. Scattered amidst the dense forest there is much secondary forest, and along the principal roads and tracks and in well-peopled areas no primary forest remains.

The creeks, lagoons, and river mouths have well developed mangrove-woodlands of the usual West African type. Marsh forests occur inland in depressions and in areas inundated by rivers. Littoral dunes often have a dense brushwood or even a forest growth.

6. THE PEOPLE

(A) MOSHI

THE Moshi inhabit a densely populated region of the upper basin of the Volta lying entirely within the Ivory Coast. In 1931 they numbered 1,342,215. They are pure negroes, varying only in minor particulars from such neighbours as the Dagari. Their tribal marks usually consist of three or four long vertical scars on each cheek, the scars often being crossed by an oblique cut. Men shave their hair pretty closely, and women's hair is short except for a long thick top-knot. They live in cylindrical huts made of rough bricks on a wooden frame and covered with a conical roof of straw or leaves. The people are animists and strongly resist the encroachments of Islam.

Mode of Life

Agriculture. It has been estimated that hunting and collecting provide some 15 per cent. of the Moshi's food. Fishing provides a further 2 per cent., leaving the remainder to be supplied by agriculture. The soil of their district is naturally infertile, but by hard work they have made it support a population 5 or 6 times denser than any other of the savanna. Cultivated crops include millet, maize, rice, yams, bananas, beans, onions, and tobacco, and the sowing of the various crops is so arranged that there is never a complete lack of food at any time of the year: this is particularly true of maize, which is harvested in August when the millet stocks are exhausted. There are some 100,000 head of cattle and many horses, donkeys, and sheep.

Industries. Blacksmiths smelt laterite in high furnaces and obtain iron from it for the manufacture of arms, implements, and ornaments (Plate 63). Weavers and dyers make white, blue, and striped stuffs. Stone-masons make mortars, whose pattern does not seem to have changed since Neolithic times, carpenters make saddle-frames and bows, basket-makers straw hats, and leather-workers decorated skins. Tailors, potters, and builders also ply their trades, in which a high degree of specialization exists.

Commerce. Markets are regularly held at fixed places. At each a sacrifice is offered to the gods, and each has a supervisor (*chef du marché*). The latter keeps order among the merchants (*yarsés*) by means of a little band of constables and a summary court. The whole arrangement is reminiscent of the 'pie powder' courts of medieval Europe. Articles of trade include salt from the Sahara, kola nuts from the forest, and copper from the coast. This trade is mainly done through the agency of the Hausa with their pack-donkeys, and affects a wide area. Indeed, in 1900 the French Ambassador in Constantinople reported with some bewilderment that a consignment of Moshi eunuchs had arrived there.

Organization

The Morho-Naba and his Council. With the possible exception of the Fons, the Moshi have the most complex political organization of any negro people in French West Africa; and, up to the present, the French have preserved it to a greater degree than elsewhere. The country is divided into eight provinces, five of them directly administered and three vassal with limited self-government. The hierarchy of authority rises through the customary channels of village chiefs, canton chiefs, and provincial chiefs to one supreme ruler, the

Morho-Naba, who resides at Ouagadougou. According to Moshi law, his authority is absolute; but it is commonly exercised through a sort of Magnum Concilium of five great officers of state: the Prime Minister and Chief of the Eunuchs, the Commander of the Horse Guards (*Chef de la Cavalerie*), the Commander of the Foot Guards (*Chef des Fantassins*), the Keeper of the Royal Tombs, and the Lord Chamberlain (*Grand Intendant du Palais*). Each of these grand functionaries is the governor of one of the five main provinces.

Other distinguished personages may be grouped as follows:

Army: the Commander-in-Chief

the Commandant of the Royal Bodyguard

Religion: the Grand Witch-Doctor (*Chef des Féticheurs*)

the High Priest

Justice: the Lord High Executioner (*Exécuteur des Hautes Oeuvres*)

Royal Household: the Master of the Household

the Master of the King's Tom-Tom

the Master of the Horse

Trade: the Minister for Cattle (*Chef des Bœufs*)

the Minister of Markets

the Minister of Commerce (*Chef des Yarsés*)

The Court and the Aristocracy. The nobles (*nakomses*) are chiefs or sons of chiefs, and they have many privileges. These formerly included the right to exact benevolences, to commit manslaughter of their inferiors, and to be judged only by the Morho-Naba; but some of these and other privileges have been curtailed or abolished in modern times. The high offices of state are filled on the nomination of the Morho-Naba; but *nakomses* alone are eligible for them. Moreover, each office has now become hereditary in one family.

The Morho-Naba leads a life not unlike that of the kings of France or of the sultans of Turkey at the height of their magnificence. He has a daily *levée* and a daily court. His courtiers pay him the utmost respect, and the court ceremonies are regulated in great detail. Each of his gestures is made according to rule and is accompanied by the music of flutes and tambourines and by loud hand-claps. He is attended by pages, who are pretty boys with hair dressed like women's, and his harem, supervised by eunuchs, is carefully secluded. The only offence for which a *nakomse* can be put to death is adultery with one of the Morho-Naba's wives. All is respect and servility, and it is not too much to say that the Morho-Naba is the prisoner of etiquette. He cannot leave Ouagadougou, and the only chance he

has to see human beings behaving naturally is to disguise himself and visit his capital by night. This he is alleged sometimes to do.

After the death of a Morho-Naba there is an interregnum. Shortly afterwards the five great officers of state meet as an electoral college to choose a successor. Possible candidates are limited to the descendants of the first Morho-Naba, a ruler who seized power about the twelfth century A.D. When these electors have agreed upon their candidate, they call together the warriors, who then swear allegiance to their new monarch.

In former days, when war was declared, the governors of provinces convoked the canton chiefs, who mobilized the fighting men of all the villages. The nakomses formed the cavalry and the ordinary citizens the infantry. The dense population enabled large armies to be put into the field, and it was the sound military qualities of these compact and numerous bodies of men that made it possible for the Moshi to preserve their country's independence until the coming of the French.

(B) KROOBOYS

Krooboyes are found in scattered villages along the coastal belt from Monrovia to Abidjan. There are almost 50,000 of them in the Ivory Coast and an equal number in Liberia. They are true negroes, though the colour of their skin is not always a very dark brown. Their legs are shorter than those of most negroes and their arms longer. When a Krooboy is in an erect position, the tips of his middle fingers are almost level with the tops of his knee-caps. The women are often hideous, coarse, and squat. The men's facial hair grows readily and beards are not uncommon. Krooboyes practise mutilation of the incisors, cicatrization, and tattooing of the arms, although the last appears to have been learnt from European sailors.

The Kroo hut is oblong. It is built on a framework of sticks interlaced with split mid-ribs of the raphia palm, the roof being thatched with fronds from the same tree. The floor is usually raised off the ground by means of piles. The interior is divided into three by planks, and it has a wooden ceiling that forms the floor of a small loft. There are also a window and a clay hearth.

Krooboyes first arrived on the coast from the interior about the beginning of the sixteenth century, and in modern times they have shown themselves to be skilful seamen and daring fishermen. They were never slave traders. They are physically strong and robust, and honest and proud in disposition. At the age of 14 or 15 a lad will



63. *A Moshi copper figure*



64. *Dan dancing girls*

contract himself for voyages of twelve or eighteen months' duration. As soon as he has saved enough money to buy a wife, he returns home, and very often settles down to village life. He will not improbably show himself to be a noisy and self-assertive bully, much given to drunkenness. Kroo villages are composed of the clans of a normal type, and each tribe has a council of head-men. Its members wear an iron anklet as a badge of office.

7. HISTORY

Ouagadougou, Kong, and Ashanti

Ouagadougou. The north-eastern part of the present colony formed the Moshi Empire of Ouagadougou. The reigning dynasty was probably founded in the early part of the eleventh century, and the Morho-Naba Oubri (c. 1050–1090) fixed his capital at Oubritenga 40 miles north-east of Ouagadougou. A contemporary of William the Conqueror, he made himself overlord of the lesser kingdoms of Tenkodogo, Zandoma, and Fada N'Gourma. The last named, however, gradually became less subservient and achieved complete independence in the thirteenth century. At the beginning of the fifteenth century Zandoma also broke off from Ouagadougou to become part of the Empire of Yatenga, now in French Sudan. Oubri's fourteen successors resided in various places in their dominions, but Sara (c. 1430–1450) finally established his throne at Ouagadougou itself. A tradition gradually evolved that no criminal could be punished for any act committed during the Morho-Naba's absence from his capital. By the time of Ouarga (c. 1540–1570) this custom was becoming a nuisance; but an indirect means was found of ending it. From that time until the annexation by the French 450 years later no Morho-Naba ever left Ouagadougou. On the whole, the history of this Empire is one of peace, and in 1897 it comprised the present provinces of Tenkodogo, Kaya, Ouagadougou, and Koudougou.

Kong. The town of Kong was founded in the eleventh century by the Senoufo, a race of animists. Like many other African races, they claim to have come out of the earth, and so to be autochthonous to the region stretching from Koutiala to the Baoulé and from Odienné to the Comoé. About the middle of the fourteenth century Nenngué, a favourite slave of the King of Kong, was freed by his master and given lands near Korhogo. On the latter's death Nenngué succeeded to the throne. His enemies staged a rebellion and attacked Korhogo,

but he repulsed them and drove them east of Kong. Many of them fled to Bondoukou. Under the dynasty founded by Nenngué Kong had a relatively peaceful existence. It continued, indeed, without external enemies until the late nineteenth century; but its internal affairs were disrupted 300 years sooner. On the break-up of the Mandingo Empire, some Dioulas, a branch of the Mandingo race, began to arrive in small groups from the neighbourhood of Ségou. Their coming was an infiltration rather than a conquest. For many years they exercised the leavening influence of a superior civilization, but it was not until the late eighteenth century that they seized supreme power. Sekou-Outara, the head of one of their principal families, massacred the reigning Senoufo king and his family, and assumed the kingdom itself. It remained with his descendants until the French protectorate. The capital of Kong was a centre for the manufacture of woollen goods and a great market in kola nuts, cloth, and salt. It was ruled by a council under the presidency of a Dioula chief. When Binger first visited it in 1888 it had a population of 15,000. In 1895, however, it was utterly destroyed by Samory. Since then it has not been of any importance.

Ashanti. Early in the seventeenth century the country east and south of Kong as far west as the Bandama began to fall under the influence of the Ashantis. The region was known as Gyaman, and its chief town was Bondoukou. This town may have been founded as early as the eleventh century, and for a long period of time it was a market centre for traders from Macina and from the coast. The first influx of Ashantis was in 1608. Twenty years later more of them arrived, exiled rebels from their own land, and they gradually acquired the ruling power in Gyaman.

In 1735 Abu Kobina, King of Gyaman, himself of Ashanti descent, determined to make a golden stool in imitation of the one at Kumasi. This stool was believed by the Ashantis to contain their country's soul. Opoku Wari, King of Ashanti, regarded Abu Kobina's proposed stool as a blasphemous insult, and demanded that he should cease making it. This demand was refused. Opoku Wari thereupon marched into Gyaman and sacked Bondoukou. Abu Kobina escaped, but his subjects, wishing to keep the favour of Ashanti, betrayed him. He was executed, his skull sent to Kumasi, and his golden stool melted down. Gyaman became subject to Ashanti and paid an annual tribute. Although rebellions were not infrequent, it did not recover its independence until the downfall of the Ashanti kingdom in 1874.

Until that time Ashanti influence was supreme. Most of the petty

kings and chiefs of the south-eastern Ivory Coast were Ashantis, and to-day the Agni are very closely akin to their eastern neighbours.

West of the Bandama, however, there is no record of any large well-organized states. The country was divided among constantly warring tribes, occasionally subject to raids by their more powerful neighbours.

The First French Contacts

There are three distinct periods in the history of the relations between France and the Ivory Coast. The first began in the middle of the seventeenth century and ended in 1704, when the first French garrison was withdrawn. The second did not open until 1842, when contact was re-established and treaties were made with local chiefs. This period closed in 1871, when all French garrisons were again withdrawn. After this, French interests were only kept alive by the payment of dues under the treaties and by the acquiescence of other European powers. In 1887, however, France, fearing British occupation from the west, determined to assert her dormant rights and so to extend her influence as to remove the possibility of a strip of British territory connecting the hinterland of the Gold Coast with that of Sierra Leone.

The Seventeenth Century. In 1666 de Bellefond voyaged along the coast in the interests of the Compagnie des Indes, and in the December of the following year Du Casse made a treaty with the King of Komenda on the Gold Coast. The King agreed to the erection of a fort, but it was never built.

In 1637 five Capuchins had arrived at Assinie. Three of them had died within a few weeks, and the other two, refused food by the natives, had taken refuge with the Portuguese at Axim. In 1687 two Dominicans, Père Gonsalvez and Père Cerisier, renewed the missionary effort. They were well received by the King of Assinie, who gave them slaves. One of these, named Aniaba, was sent to France to be educated, in the belief that he was the heir apparent. He was baptized, and put himself and his country under the protection of France. King Louis XIV took an interest in him and gave him a commission as captain in the cavalry. On the death of the King of Assinie in 1701, Aniaba was sent to take possession of his inheritance. He travelled in the same ship as the newly-appointed Prefect Apostolic of the Guinea Coast, Père Godefroy Loyer. Not unexpectedly, Aniaba received at Assinie the welcome to which his servile blood entitled him. The

captain of the ship made no attempt to help him, and he relapsed into his former insignificance.

From the rightful king the French obtained permission to build and man a fort at Assinie. In 1701 this fort was attacked by the Dutch, who sent four ships from Elmina to bombard it. One of their cannon-balls chanced to go through a beehive. The bees emerged and drove the garrison out of the fort. The Dutch, thinking that resistance had ended, disembarked, but they were caught between the fire of the garrison, who had returned, and that of their native allies in the bush. After losing 39 killed, the Dutch retired, leaving 11 prisoners in French hands. Notwithstanding this defence, it was found impossible to maintain the fort permanently, and the garrison was withdrawn in 1704.

1704-1842. For the next 130 years there was little contact between Europe and the Ivory Coast. The surf-bound beaches, the absence of natural harbours, and the hostile temper of the natives deterred the trading companies of France, England, and Holland. Senegal, the Gambia, the Gold Coast, and Dahomey offered more tempting opportunities. The sole commercial activities were those of private ships. In 1730, for example, there was an account by one writer of the kidnapping of negroes by European captains. The captives were, of course, sold as slaves. In 1819 the total annual produce of the coast from Monrovia to Assinie was valued at £57,000 by an English merchant, who described the natives as being friendly and willing to trade. There were, however, no trading stations, and the commerce was casual and intermittent. Treaties of 1787 and 1788 with local chiefs gave the French concessions at Sassandra and at Grand Lahou, but no factories were ever built.

During most of the eighteenth century a French warship made a yearly voyage from Goree to Gabon to look after such French interests as there were. On one of these voyages a small settlement was founded at Amoku, near Cape Coast. There was certainly a garrison there in 1788, and Gold Coast records of 1794 describe negotiations for its departure to the West Indies. Its members declared themselves to be 'loyal subjects of King Louis XVII'. It was not, however, until 1803 that they were taken off in a French vessel. Since then the French have had no foothold in the Gold Coast.

The Second French Occupation

In 1838 the Marseilles firm of Régis had almost a monopoly of French trade along the Guinea coast. This was not pleasing to the

merchants of Bordeaux, who decided to try and gain some profit for themselves. The Government was persuaded to take some action, and Bouet-Willaumez was instructed to examine the prospects of commercial expansion. He made treaties with various chiefs, and by 1842 Garraway (now in Liberia), Grand Bassam, and Assinie had accepted French protection. At Assinie the local chiefs explained that their treaty needed to be ratified by Atakla, the paramount chief of the Sanouis. His capital was at Krinjabo, a few miles south of Aboisso. On 4 July 1843 his nephew, Amatifu, arrived at Assinie with full powers, and not only confirmed the action of the chiefs but also placed the whole of his uncle's dominions under France.

In the same year fortified posts were erected at Assinie (Fort Joinville) and at Grand Bassam (Fort Nemours). The former was on the site of the one abandoned in 1704. The two subsequent years saw treaties with the chiefs of Sassandra, Fresco, Grand Lahou, and Jacquerville. Most of these treaties yielded absolute sovereignty over a small area, protectorate over a larger one, and freedom to trade. Often there was also the right to exclude other European nations. Whatever their terms, they secured for the French control of almost the whole coastline of the present colony. Trading houses were immediately set up at Grand Bassam and at Assinie.

The usual differences arose between the natives of the coast and those of the interior. The latter wished to trade directly with the French, the former to act as middlemen. In default of tolls the littoral tribes were prepared to pillage. Very shortly after the establishment of the post at Grand Bassam, Bouet-Willaumez had to borrow troops from Senegal for an expedition against the tribes of the north bank of the Ebrié lagoon. In 1853 another expedition to the same district was necessary. It was commanded by Faidherbe and resulted in the chief of Dibrimou, 4 miles north of Dabou, accepting French protection. During its course a small fort was built at Dabou.

In these early days of the French occupation, Aboisso, the Sanoui town on the Bia some 25 miles from the sea, developed as a native market. Amatifu, who succeeded his uncle as paramount chief of the Sanouis, was an Ashanti, and the town did a flourishing entrepôt trade. Goods were bought from French merchants at Assinie, and transported by river to Aboisso, at which point falls prevented further progress. Caravans came from Ashanti to Aboisso, where native products were exchanged for European cloth, spirits, firearms, and ammunition. The Ashantis made huge profits in their own country, for they kept a monopoly of trade by force of arms. This import of

munitions was later to lead to trouble with the British, and during the war of 1873 Assinie was blockaded.

During the middle years of the century no serious attempt was made by the French or any other Europeans to extend their influence. Although farther west there was keen competition (p. 151) between Senegal and Sierra Leone, nothing of the sort occurred on the Ivory Coast. On the Gold Coast the British were not contemplating expansion. The Parliamentary Committee of 1865 would, indeed, have proposed withdrawal but for one consideration. This was that the coastal tribes had come to rely on the British for protection against the Ashantis. In the circumstances the Committee recommended no change. The Dutch at Elmina (which they held until 1872) were not ambitious, Portuguese power was decadent, and the Germans had not yet arrived. The French, therefore, had nothing to fear from rivals, and it was the stress of the Franco-Prussian War that forced them to evacuate Assinie, Grand Bassam, and Dabou in 1871. Their interests were confided to Arthur Verdier, a merchant who owned factories at Grand Bassam and at Assinie and whose vessels plied from Liberia to Cape Coast. In 1878 Verdier was given the title of French Resident and was placed under the nominal supervision of the commander-in-chief at Goree. He was supplied with enough money to pay the treaty subsidies to the local chiefs and to maintain a small police force. These arrangements lasted until 1889. Thanks to the loyalty and devotion of Verdier and of his assistant, Treich Laplène, France was able to keep her hold on her Ivory Coast possessions during the lean post-war years.

French Expansion, 1887-1900

The French determined to secure in the Ivory Coast the effective occupation demanded by the General Act of the Berlin Conference. Penetration was made simultaneously from the north and from the south, but it will be clearer if the two are described separately.

Binger and the Moshi Empires. In September 1887 Lieutenant Georges Binger set out from Bamako. He was the only European in his party, which was small and, in the military sense, unarmed. In spite of the journeys of Barth (1853) and of Adolf Krause (1886) the country south of Sikasso was almost unknown. In February 1888 Binger reached Kong, where he was well received. He then turned north, passed through Bobo Dioulasso, and on 16 June arrived at Ouagadougou. He endeavoured to persuade the Morho-Naba to accept French protection, but met with no success. Leaving Ouaga-

dougou on 10 July, he went south through what are now the Northern Territories of the Gold Coast, and, returning by Salaga, Kintampo, and Bondoukou, met Treich Laplène at Kong in January 1889. Together they proceeded to Grand Bassam, which was reached on 20 March, eighteen months after Binger had left Bamako.

This journey finally disposed of the mythical mountains of Kong and much extended European knowledge of this part of West Africa. The French decided to extend their dominions to include all the country between the Niger bend and 11° N. With this aim in view, several missions were sent, some from Dahomey and some from French Sudan. The most important were those of Monteil (1890–1891), Marchand (1892), Destanane (1895), and Alby (1895–1896). By peaceful methods these succeeded in bringing under the protection of France the Moshi Empire of Yatenga and the lands of several other tribes; but, before the proud Empire of Ouagadougou would submit, fighting was necessary. By order of Colonel Trentinian, Governor of French Sudan, a force under Lieutenants Voulet and Chanoine left Bandiagara on 30 July 1896. The Morho-Naba Bukari resisted, but by 1 September his army was defeated and his capital occupied. Eight days later Bukari made a counter-attack, but was repelled. During the fighting Ouagadougou was set on fire, and after it the Morho-Naba fled to the Gold Coast. On 19 September Voulet concluded a treaty with the Gourounsi farther south. The whole French action had forestalled the British, an expedition under Captain Donald Stewart arriving at Ouagadougou after its capture.

Treich Laplène. No political move was made in the coastal region until 1884. In that year Treich Laplène made treaties with the chiefs of Grand Bassam and Jacqueville. Two years later, after more than forty years of friendship with the French, Amatifu died at Krinjabo, and in the same year the Ivory Coast came under the jurisdiction of Dr. Bayol, the Lieutenant-Governor of the Rivières du Sud. Amatifu was succeeded by his nephew, Akasimadu, who, despite the treaties, was inclined to respond to British overtures. Times had changed since 1865, and expansion of influence was the new order of the day. On the French side, Bayol empowered Treich Laplène to establish protectorates over the interior tribes. In 1887, therefore, he made treaties which brought under French protection the whole country on both banks of the Comoé as far north as Altakrou, 120 miles from the sea. In this way he secured much of the modern colony from British penetration and also confirmed the wavering allegiance of Akasimadu. In 1888 an extension was made as far north as Bon-

doukou. The chief of this place agreed to accept French terms on 13 November, a week before Captain Lethbridge arrived with a British offer.

Treich Laplène then set off for Kong. On 24 December he met a deputation of chiefs at Kovéré, some 20 miles south-east of the town, who signed a preliminary treaty. As mentioned above, he joined Binger, and on 10 January 1889 this treaty was formally confirmed by the two of them with the King of Kong.

As a result of these two years' intensive effort French influence was supreme, and the Anglo-French Convention of 10 August 1889 delimited the boundary with the Gold Coast in accordance with it. Many years elapsed, however, before the territories concerned were fully pacified.

In August 1889 the French settlements on the coast from the Cavally to Assinie were placed under a Resident, subordinate to the Lieutenant-Governor of the Rivières du Sud. The Resident was to enjoy the right of direct correspondence with the Minister of Colonies, but to forward copies of his letters to the Lieutenant-Governor. At the same time the term 'Ivory Coast', which had hitherto been confined to the seaboard west of the Bandama, was officially adopted for the whole stretch under the Resident's control. The term 'Gold Coast' was thenceforward restricted to the British lands to the east.

By a decree of 12 October 1889 Treich Laplène received the well-earned title of 'Resident and Administrator of the French Settlements of the Ivory Coast', but he did not live long enough to enjoy the fruits of his work. Worn out by his tremendous exertions in so unhealthy a climate, he fell a victim to malaria and was ordered to return to France. On 9 March 1890 he was carried on board a ship in the roads of Grand Bassam, but, before the ship sailed, he died. He was only 29 years of age. His monument at Grand Bassam well describes him as '*Fondateur de la Colonie de la Côte d'Ivoire*'.

At his death the system of merchant Residents came to an end, and the colony was administered by officers of the Colonial Administrative Service.

By a decree of 10 March 1893 the Ivory Coast attained the status of a colony. Its capital was fixed at Grand Bassam, and its first Governor was Binger.

West of the Bandama. Little was done in the west before the east had been made secure. In 1890 and 1891 the lower reaches of the Bandama, the Sassandra, and the San-Pedro were explored and posts established. Towards the end of the latter year Captain Ménard

crossed the Bandama, touched at Tiémou, and then turned south-west to Sarhala. Here he helped the native chiefs to resist Samory, but on 14 February 1892 he was killed near Séguéla by one of that freebooter's captains.

On 8 December 1892 the Franco-Liberian Boundary Convention was signed. This convention was a generous action on the part of the French, for by it they abandoned all rights west of the Cavally. Some of these rights, as, for example, at Garraway, were of long standing and went back to the time of Bouet-Willaumez. Farther inland the convention was impossible to implement, as it was based on faulty geographical knowledge. Demarcation proved impracticable, and a new treaty was made on 13 September 1907.

In 1893 Binger created posts at Sassandra, San-Pedro, Béréby, and Bliéron. He arranged for the production of a map of the coastal region, and then turned his attention to the comparatively unknown Baoulé country between the Bandama and the Nzi. Two years previously the natives had killed two French traders. The people of Tiassale resisted, but Captain Marchand, who had started from Dabou, pushed through them to cross the Bandama and reach Toumodi. From there he explored the neighbouring region, and acquired by his audacity a reputation that is still remembered. After that he went on to Kong, but, owing to the strength of Samory, he returned to Grand Bassam in July 1894. This was a valuable expedition.

Samory. Samory's career in the Ivory Coast was as follows. Driven out of the Sudan in February 1892, he entered into an alliance with the chief of Odienné, making this town the headquarters of his raiding activities. Early in 1893 Colonel Combes advanced with a light column from the valley of the Milo, but Samory burned Odienné and fled south towards Touba. Combes overtook him and dispersed his forces, but, feeling that further pursuit was useless, he withdrew his men to Kerouane in French Guinea. Samory regathered his army and advanced north for a short time, but he soon returned to the Ivory Coast and made Dabakala his headquarters.

He began to lay waste the country and to enslave its inhabitants, and Monteil's expedition was diverted from French Equatorial Africa to deal with him. Monteil landed at Grand Bassam on 12 September 1894, but he was seriously hindered by difficulties of transport. There were no roads; the rivers were unnavigable; and the tsetse-flies forbade the use of pack animals. In the circumstances, recourse was necessary to native porters. Local tribesmen knew of Samory by repute, and they were not anxious to make his closer acquaintance.

Recruiting was difficult, and it was not until 12 December that the column concentrated at Tiassale. Further delay was caused by an insurrection of the surrounding tribes. It was necessary to quell this and also to leave troops to guard the lines of communication. Samory was thus given ample time for preparation and Monteil had to fight hard to reach Dabakala on 15 February 1895. When he arrived there, he found it evacuated. Even so, he was forced to retire a little later, and at Satama Soukouro he received orders to hand over his command and to return to France. His successor, Caudrelier, was left free to advance or to abandon the operation. He chose the latter course. During its five days' retreat to Koudiokofi, his force was continuously harassed. Samory re-established himself at Dabakala and was now master of a country which had voluntarily accepted French protection only five years previously. In April 1895 he sacked Kong, without the protecting power being able to do anything to save it. Late in 1897 the French sent three columns to attack Dabakala from the north, the east, and the south. Samory was unable to cope with such a concentration, and his armies gradually melted away. He fled south-westwards, and on 29 September 1898 he was captured at Guélémou (Guéoulé) near Man.

Final Pacification

Local Revolts. Not all the tribes which had gladly placed themselves under French protection liked the corollary of French discipline. In 1898 the people of Assikasso rebelled because the French forbade the export of rubber to the Gold Coast. Clozel, an administrator, was besieged in Assikasso for sixty-three days, and he and his garrison suffered much from hunger and thirst. Pacification of this region was assisted, however, by the conclusion of the Anglo-French Convention of 14 June. This abolished fiscal barriers between the Ivory Coast and the Gold Coast, and the export of rubber was consequently permitted once again. In the same year there was trouble at Dabou and in the following year among the Baoulés and on the Cavally. The French post at Toumodi was burned and an administrator killed. A force of more than 300 men was required to restore order.

A decree of 27 September 1897 separated the Ivory Coast from the Federation, but the decree of 17 October 1899 rejoined them. By the same decree Odienné, Kong, and Bouna were transferred from French Sudan to the colony.

Angoulvant. In 1908 M. Angoulvant became Lieutenant-Governor,

Soon after his appointment he reported that the southern part of the colony presented a false appearance of security. The northern provinces had been freed from Samory by force of arms but many of the tribes elsewhere were ready to rise at the smallest provocation. They had large quantities of flintlocks, bought from a variety of sources. Angoulvant therefore obtained leave to pursue a policy of methodical military occupation and disarmament.

French troops penetrated the Gouro and the Bété country on the lower Sassandra and established posts at Vavoua on the Dé and Zuenoula on the Marahoué. Next year (1909) operations on a modest scale were undertaken against the Ayous round Tiebissou, the Adioukrou north of the Ebrié lagoon, and the Didas near Fresco. In 1910 rather larger forces were necessary against the Abés, a tribe living in the region north of Abidjan. The railway, which had been begun in 1903, was planned to pass through a grove sacred to ancestor-worship, and the destruction of this grove roused the Abés to revolt. In January they attacked a train near Agboville, killed some passengers, and tore up the rails. The revolt spread to neighbouring tribes, not affected by the sacrilege, and the whole forest region between the Comoé and the Nzi was in a turmoil. Heavy French losses were sustained and fighting lasted until December. Notwithstanding the disturbances, construction of the railway was pushed ahead, and the line reached Dimbokro by the end of the year.

During the first six months of 1911 the Imonas and other tribes of the region near Beoumi were pacified.

In the same year the conquest of the western part of the colony was begun. The tribes there were as brave and independent as their eastern counterparts, and the country was less well known and in no way settled. Operations began in January on the upper Cavally, and in February the post of Logoualé, south of Man, was founded. The Danane district held out longer. Its inhabitants were supported by the Manons and Guerzés of French Guinea, and attacks were made on Lola and N'Zo. The struggle in the country between N'Zo and the Sassandra lasted until March 1912 and on the lower Cavally until May 1913. In every district the actual fighting was followed by a period of military occupation, during which patrols made a careful search for arms. It was not until May 1915 that M. Angoulvant could report that the whole colony was peaceful. The provinces of Guiglo and Man (combined in 1937) continued under military government for some years. This was, however, due as much to the fear of incursions from Liberia as to the attitude of the inhabitants.

In the course of these five years 112,396 guns were destroyed, fines to a total of 733,726 francs (£29,093) imposed, and 220 native leaders deported. These measures were found necessary mainly in the eastern half of the colony. The peoples of these parts had long been subjects of the French and could therefore be considered as rebels in the proper sense of the word. In order to facilitate future administration many native villages in inaccessible districts were destroyed and their inhabitants transferred to larger villages. The Adioukrou, for example, previously dispersed among 247 settlements, were concentrated in 17, each within easy reach of an administrator. Similarly the Ngans round Ouossou were reduced from 147 groups to 10. The new villages were well sited and laid out on sanitary lines. The whole pacification provided an excellent example of French colonial methods.

From 1 January 1933 the colony of Upper Volta ceased to exist and the medieval Empire of Ouagadougou with some land to the west was added to the Ivory Coast. This acquisition of 59,212 square miles completed the colony's present form and area.

Until 1900 the capital was Grand Bassam. Yellow fever was always endemic there, and a bad epidemic of it in May 1899 served to emphasize this. The capital was consequently moved to Bingerville. In 1934 it was transferred to Abidjan, the terminus of the railway.

The Prophet Harris

In 1914 a remarkable religious movement began in the Ivory Coast. William Wade Harris, an elderly native of Liberia, appeared in the neighbourhood of Grand Lahou. Claiming to be the messenger of God, he preached the dignity of labour and obedience to authority. He denounced the belief in fetishes and charms, condemned the drinking of alcohol, and, while tolerating polygamy, forbade adultery. With a well-worn Bible in his hand, he proclaimed 'one fold, one Shepherd'. The response was amazing. Natives cut down their sacred groves and expelled their fetish priests. Great crowds followed Harris and listened to his words. His fame spread throughout the country, and he was soon revered as a prophet. For a time the French Government looked upon him favourably, more especially as they believed that the fetish priests had inspired many of the revolts; but this attitude rapidly changed. Without his authority, Harris's followers began to circulate rumours that taxation was to be reduced and that the French were to leave the country. Harris was told to go.

He accepted this decision with Christian resignation and retired to his native Liberia in April 1915. He lived there quietly until his death twelve years later.

His work has endured. In 1916 a French administrator reported that Harris's influence had reached 120,000 people, that fetishes had not reappeared and that churches were still thronged by his disciples. In 1924 Wesleyan missionaries in the Gold Coast told a similar tale, and in the following year they entered the Ivory Coast. This was with the consent of the Lieutenant-Governor and in response to an appeal from Harris's followers. Even at that date these were estimated to number 45,000.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

THE total population of the Ivory Coast is larger than that of any other colony, and in 1937 there were 3,981,459 persons altogether, with an average density of 21.62 per square mile. By far the most closely peopled area is the Moshi country north of the Gold Coast border. The rest of the colony has not very many inhabitants, and the coastal districts adjacent to Liberia and to the Gold Coast have exceptionally few. Two small regions are marked as 'uninhabited' on the 1/2 M map. One of these is on either side of the middle Comoé, partly in the province of Korhogo and partly in the province of Bondoukou. The other is farther north-north-west, in the province of Bobo Dioulasso. The vegetation of both these regions is rather poor savanna.

The Census of 1931 recorded 1,866,316 inhabitants, but the huge increase calculable from the figures for 1937 is largely due to the transference in 1933 of 2,018,837 inhabitants from the former colony of Upper Volta.

Natives. The largest native tribe is that of the Moshi, numbering more than 1,300,000. There are more than 500,000 Dans, almost that number of Agni, and over 400,000 Senoufo. Other tribes with more than 100,000 members in the colony are the Koua-Koua, not found elsewhere, the Bobo, the Fulani, and the Lobis.

In 1936 there were 689 native citizens.

Europeans. In 1937 the number of Europeans was 3,801, although there is no big town other than Abidjan, where there were 1,478 of them.

INLAND TOWNS

BOBO DIOULASSO ($11^{\circ} 12'$; $4^{\circ} 17' W.$). Altitude, 1,421 feet. Population, 11,453, including 234 Europeans. Mixed Commune. Headquarters of the Upper Ivory Coast. Provincial headquarters. Magistrate's Court. Hospital and maternity home. Barracks. Police station. Meteorological station. Landing-ground. Wireless station. Regional School. Protestant mission. Roman Catholic mission and seminary. Prison. Hotels. Garages. Agricultural experimental station. Market every five days.

On the eastern edge of the Sikasso plateau and in country mainly inhabited by Senoufo, Bobo Dioulasso is one of the principal route centres of the Federation.

It is the northern terminus of the railway from Abidjan (494 miles) and it is the junction point of three intercolonial roads. The first of these runs westwards to Bougouni (240 miles), Bamako (334 miles), and ultimately Dakar (1,155 miles); the second runs southwards to Bouaké (293 miles) and Abidjan (535 miles); and the third runs eastwards to Boromo (122 miles), Ouagadougou (230 miles), and Fada N'Gourma (367 miles). There are two colonial roads. One goes generally southwards to Gaoua (143 miles), Bouna (250 miles), Bondoukou (377 miles), Aboisso (606 miles), and Assinie (663 miles), while the other goes northwards to the border of French Sudan (95 miles), 73 miles short of Koutiala. In addition there are several minor roads and native tracks. There is a weekly bus service to Boromo and Ouagadougou, another to Gaoua and Bouna, and one twice a week to Bamako.

In 1939 there was a fortnightly air service of Air France in one direction to Bamako and Dakar and in the other to Niamey, Gao, and Algiers.

As a result of its good communications Bobo Dioulasso is a flourishing trading town for the local products of cotton, shea butter, kapok, wax, and hides. Much of the cotton is ginned in the town itself.

If the plans for railway extension ever come to maturity, Bobo Dioulasso may be the junction for lines from Ouagadougou and Ségou as well as from the coast.

BOUAKÉ ($7^{\circ} 43'$; $5^{\circ} 01' W.$). Altitude, 1,204 feet. Population, 5,841, including 175 Europeans. Provincial headquarters. Medical post and maternity home. Barracks. Main meteorological station.

Emergency landing-ground. Wireless station. Regional School. Protestant and Roman Catholic missions. Hotel. Garage. Agricultural experimental station and farm school. Weekly market.

This town has grown up on the highest point of a little plateau just north of the belt of dense forest. Movement is relatively easy, and, in a modest way, Bouaké is an entrepôt for the products of that forest and of the more open country to its north.

It is on the railway, being 196 miles from Abidjan and 298 miles from Bobo Dioulasso. By intercolonial road it is 293 miles from Bobo Dioulasso and 242 miles from Abidjan. Colonial roads go to Beoumi (38 miles) and Séguéla (132 miles), to Mankono (92 miles) and Séguéla (135 miles), and to Ouellé (93 miles). There is a weekly bus service to Beoumi, Vavoua (116 miles), Séguéla, and Man (257 miles).

There is a cotton ginnery, and the town is the home of a number of native craftsmen. The agricultural experimental station is of considerable size and importance, paying particular attention to livestock.

DIMBOKRO ($6^{\circ} 41'$; $4^{\circ} 45'$ W.). Altitude, 345 feet. Population, 1,223.

Provincial headquarters. Medical post. Regional School. Roman Catholic mission. Hotel. Garages.

Dimbokro is where the railway crosses the Nzi. The town itself is on an eminence nearly 2 miles north of the right bank of the river, and is thus well clear of the flood plain. The railway station is 114 miles from Abidjan, 82 miles from Bouaké, and 380 miles from Bobo Dioulasso. Colonial roads connect Dimbokro to Akoupé (98 miles) and Toumodi (24 miles). There is also a number of native tracks.

There are several sawmills and a cotton ginnery.

FIRKESSÉDOUGOU ($9^{\circ} 28'$; $5^{\circ} 11'$ W.). Altitude, 1,099 feet. Population, *c.* 4,000. District headquarters. Custom-house. Dispensary. Meteorological station. Emergency landing-ground. Roman Catholic mission. Garage. Agricultural experimental station.

Firkessédougou is on a hill between two minor tributaries of the Bandama, and is a centre for railway and road communications. By railway it is 347 miles from Abidjan and 147 miles from Bobo Dioulasso. It is on the main north-south intercolonial road, being 147 miles from Bobo Dioulasso and 388 miles from Abidjan. Firkessédougou is also on the colonial road that runs from Odienné to Bouna. It is 185 miles from the former place and 198 miles from the latter.

The local agricultural experimental station specializes in cotton.

KORHOGO ($9^{\circ} 21'$; $5^{\circ} 33'$ W.). Altitude, 1,312 feet. Population, *c.* 4,000, including 32 Europeans. Provincial headquarters. Dispensary. Emergency landing-ground. Regional School. Roman Catholic Vicariate Apostolic of the Middle Ivory Coast. Garage. Agricultural experimental station. Weekly market.

But for the railway and the intercolonial road, Korhogo would excel Firkessédougou in almost every way. On the right bank of a small tributary of the Bandama, it is more accessible and is of greater administrative importance. Colonial roads run north to the border of French Sudan (75 miles) and Sikasso (104 miles), west to Boundiali (71 miles) and Odienné (152 miles), and east to Firkessédougou (33 miles) and Bouna (231 miles). Local roads come in from Séguéla on the south-west, from the north-west, from the east-south-east, and from the south-south-east.

The agricultural experimental station prepares sera for the prevention and cure of animal diseases. Korhogo stands at the junction of the manioc zone with the millet zone, and the products of its neighbourhood are unusually varied. There is a cotton ginnery.

KOUDOUGOU ($12^{\circ} 16'$; $2^{\circ} 22'$ W.). Altitude, 1,020 feet. Population, 11,370. Provincial headquarters. Dispensary and maternity home. Emergency landing-ground. Regional School. Roman Catholic mission. Agricultural experimental station. Market every three days.

Koudougou is a large Moshi town near the source of one of the tributaries of the Red Volta. It has a sheltered position at the foot of a range of hills; but, in spite of being a provincial headquarters, it does not play a great part in the French scheme of things. There are very few European inhabitants, and the market is of no more than local significance. There is, however, a small cotton ginnery.

The town is in the middle of an area where sleeping-sickness is extremely prevalent (Vol. I, p. 140), and it is the headquarters of one of the travelling field units that fight this disease.

By colonial road Koudougou is 62 miles from Ouagadougou, 18 miles from Sabou, and 82 miles from Dédougou.

MAN ($7^{\circ} 24'$; $7^{\circ} 33'$ W.). Altitude, 1,135 feet. Population, *c.* 4,000. Provincial headquarters. Dispensary and maternity home. Meteorological station. Regional School. Protestant and Roman Catholic missions. Hotel. Garage. Agricultural experimental station. Weekly market.



65. *A native market in a coastal village*



66. Oil palms and young cocoa trees

The little river Ko has cut a gorge through the south-eastern slopes of the Man mountains on its way to join the N'Zo. Where it debouches on to the forested plain a native village has long existed, and in 1908 a military post was set up there by Lieutenant Laurent. Since that date Man has grown considerably, and in 1920 it was made the headquarters of a province.

The intercolonial road from Conakry (811 miles) skirts the edge of the mountains from Danane (51 miles) to Man, and then turns south to Duékoué (56 miles) and Abidjan (400 miles). A colonial road runs north to Touba (78 miles) and another east to Vavoua (81 miles). There is a weekly bus service to and from Séguéla, Vavoua, and Bouaké (257 miles).

The agricultural experimental station specializes in coffee and in cinchona.

Like Koudougou, Man is also the centre of an area much infected by sleeping-sickness, and it also is the headquarters of a travelling field unit.

OUAGADOUGOU ($12^{\circ} 23'$; $1^{\circ} 32'$ W.). Altitude, 991 feet. Population, 16,595, including 218 Europeans. Mixed Commune. Provincial headquarters. Custom-house. Hospital and maternity home. Barracks. Police station. Main meteorological station. Landing-ground. Wireless station. Regional School. Protestant mission. Roman Catholic Vicariate Apostolic of the Upper Ivory Coast. Orphanage. Power station. Prison. Hotel. Garage. Agricultural experimental station. Daily market.

Some account of the history of Ouagadougou as a native capital has been given in Sections 6 and 7.

Until the abolition of that colony, Ouagadougou was the capital of Upper Volta, and to-day it is still an administrative and communications centre of great importance. It contains the palace of the Morho-Naba, a military headquarters, and a training school for nurses and dispensers. It is the only town in the whole colony to have public electric lighting in its streets. The agricultural experimental station has done much useful work in improving the standard of local livestock.

Communications. By intercolonial road Ouagadougou is 230 miles from Bobo Dioulasso, 564 miles from Bamako, 137 miles from Fada N'Gourma, 111 miles from Tenkodogo, and 261 miles from Sansanné Mango. Colonial roads lead north-westwards to Yako (63 miles) and Ouahigouya (117 miles), north-eastwards to Kaya (61 miles) and

Dori (105 miles), and south-eastwards to Po (101 miles) and across the frontier of the Gold Coast to Navrongo (128 miles). There is a minor road south-westwards to Leo.

There is a weekly bus service to Bobo Dioulasso.

It is generally supposed that the railway will shortly be extended from Bobo Dioulasso to Ouagadougou.

9. ADMINISTRATION

Councils

The Ivory Coast sends a delegate to the Supreme Council of the French Colonial Empire.

The colony's Executive Council is, under the decree of 30 March 1925, composed of the Governor as President, the Secretary-General, the Delegate to the Supreme Council, the Attorney-General, the officer commanding the troops, two citizens, and three subjects. The standing Committee of this Council consists of the Secretary-General, the Attorney-General, one citizen, and one subject.

Territorial Divisions

In 1932 a number of provinces were transferred from the former colony of Upper Volta, and by a decree of 13 July 1937 they were grouped into a dependency known as the Upper Ivory Coast (Haute Côte d'Ivoire) under a senior administrator. His headquarters were first at Ouagadougou and later at Bobo Dioulasso. Orders by the Governor-General during the same year reduced the number of provinces from 26 to 20, and renamed any that had previously borne any other title than that of their chief town.

This regrouping (Fig. 34) came into force on 1 January 1938, and is as follows:

<i>Province and headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Abengourou . . .	6,355	Akabilékrou, Bougouanou
Abidjan . . .	3,089	Dabou, Tiassale
Agboville . . .	3,552	Adzopé
Bondoukou . . .	12,233	Bouna
Bouaké . . .	13,726	Beoumi, Dabakala, Katiola, M'Bahiakro, Tiebissou
Daloa . . .	10,715	Bouafle, Issia, Oumé, Zuenoula.
Dimbokro . . .	6,433	Bocanda, Ouellé, Toumodi
Grand Bassam . . .	3,745	Aboisso, Assinie
Grand Lahou . . .	4,923	Divo, Lakota
Korhogo . . .	22,181	Boundiali, Firkessédougou
Man . . .	11,641	Danane, Duékoué, Guiglo, Toulépleu

<i>Province and headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Sassandra . . .	7,027	Gagnoa, Soubré
Séguéla . . .	13,198	Mankono, Touba
Tabou . . .	5,444	..
<i>Upper Ivory Coast</i>		
Bobo Dioulasso . . .	16,017	Banfora, Houndé
Gaoua . . .	8,187	Batié, Diébougou
Kaya . . .	6,757	..
Koudougou . . .	10,166	Boromo, Dédougou, Yako
Ouagadougou . . .	14,016	Leo, Po
Tenkodogo . . .	4,865	..

The areas of the provinces average over 9,000 square miles, a little larger than Wales.

Provincial Councils and Communes. In several provinces, in particular in all those of the Upper Ivory Coast, there are Councils of Notables.

There are four mixed communes, Abidjan, Grand Bassam, Ouagadougou, and Bobo Dioulasso, each under an administrative officer as mayor, and with a nominated advisory council.

There is a Chamber of Commerce, founded in 1908, and since 1925 there has been a Chamber of Agriculture and Industry. These are at Abidjan.

Courts of Law

The Court of Assize, the Tribunal of First Instance, and the Colonial Court of Appeal all sit at Grand Bassam. There is a Magistrate's Court at Bobo Dioulasso.

Native Organization

In the Ivory Coast the French have not destroyed the old native systems of government so thoroughly as in other colonies. In the Moshi country they have maintained the prestige of the Morho-Naba over his subjects. The present occupant of the throne is in the direct line of succession from his eleventh-century ancestors. He is guided by French advice, but he is still surrounded by his court officials. In addition to the customary dues from his subjects he receives a salary of 20,000 francs from the colonial budget. In the lower Ivory Coast, too, among some of the tribes of Ashanti origin there are chiefs of the old stock still enjoying the prestige which their descent confers.

Although, as in other colonies, the chiefs have lost all their judicial functions and rule only by the grace of the Governor, yet these native

states of the Ivory Coast afford a closer parallel to the British policy of indirect rule than anywhere else in French West Africa.

Land Tenure

By the end of 1937 provisional concessions had been granted over an area of 194 square miles and concessions over 163 square miles. By the same date there had been granted under the European immatriculation system 2,536 certificates of title, covering 240 square miles. Under the simpler process of Confirmation of Native Land Rights, 1,511 certificates had been granted, covering 84 square miles. A much greater area has been granted by concessions in the Ivory Coast than in any other colony of the Federation, and the same applies to registered titles of both kinds.

Labour

In 1935 there were 925,900 persons on the forced labour rolls, 6,759,000 man-days were worked, and 3,014,400 francs were paid in redemption money. During 1936, 23,100 labourers worked under written contracts for private concerns, while 21,000 worked on verbal agreements. For public services there were 200 working on written contracts and 7,500 without. These figures take no count of casual labour of any kind. They show, however, a far greater number of persons liable to compulsory labour, and also in regular employment, than in any other colony.

Agriculture

In 1927 the Department of Agriculture consisted of 6 Europeans and 30 Africans, with a vote of 285,000 francs: ten years later there were 35 Europeans, and 56 Africans, with a vote of upwards of 1,000,000 francs. Produce inspection is carried out by a staff which now numbers 3 Europeans and 150 Africans.

Experimental Stations. The principal agricultural experimental station was started at Bingerville in 1913, and it is now fitted with a laboratory. There, also, African probationers for the agricultural service undergo a two years' general training. This station does not specialize in any particular product. An experimental station for the study and improvement of the oil palm was started by the federal government in 1921 at La Mé, north of Grand Bassam. This was handed over to the colonial authorities in 1933. The stations at Man and Gagnoa both specialize in coffee and cocoa. Minor experimental stations exist to deal with products grown or to be encouraged in their immediate vicinity. Those at Bouaké and Firkéssedougou are

chiefly devoted to cotton, while farther north farm schools at Bobo Dioulasso, Dédougou, Koudougou, and Banfora study cotton, ground-nuts, millet, and other local crops. Endeavours are made to introduce

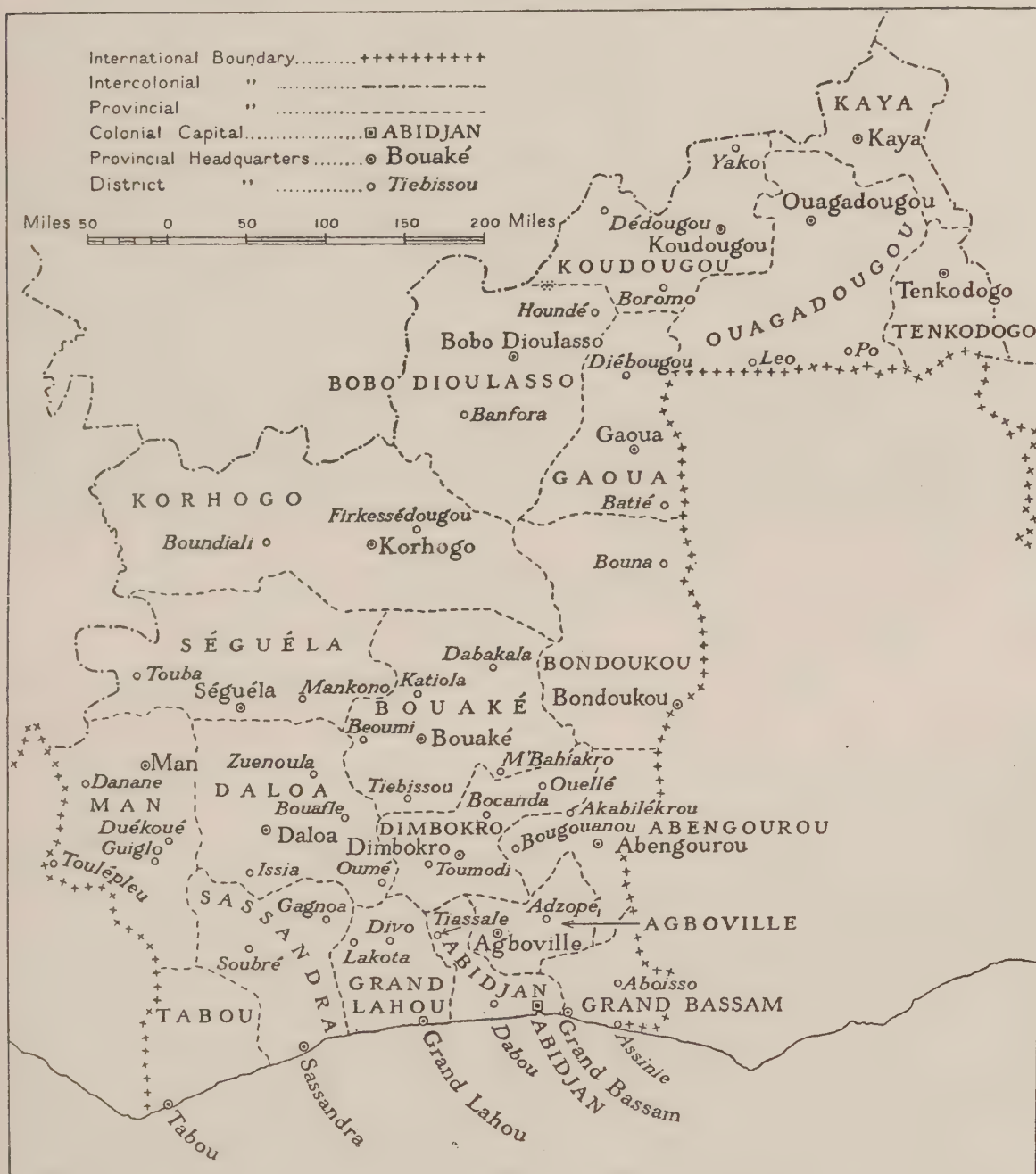


FIG. 34. *The Ivory Coast: Administrative Divisions*

the use of the plough to native farmers and to explain the rotation of crops and the use of manure. At Korhogo there is a government farm for the improvement of local livestock.

Native Provident Societies. No society was formed in the Ivory Coast until 1926, when that of Dabou was constituted with the primary object of providing for its members mechanical presses for the

extraction of palm oil. In 1937 there was a society in each province. Their total receipts were 5,300,000 francs, four-fifths of which was provided by members' subscriptions. Their expenditure came to 4,300,000 francs, the largest item being 2,100,000 francs for the purchase of seed and implements. In the south, at any rate, the activity of these societies is still principally in palm oil; but, in addition to presses for palm oil, the societies lend machines for treating coffee, cocoa, and ground-nuts, and possess ploughs and lorries for their members' use.

In recent years European planters have also adopted co-operative methods, but no statistics are available.

Forestry

The French West African Forestry Service only came into being as a separate entity in 1923, and in other colonies forestry is still administered as part of agriculture. The Ivory Coast, however, contains the most important forests in the whole Federation, and since 1925 the forestry service has been organized under its own departmental head. In 1934 there were 5 European Forestry Officers, 12 junior officers (*contrôleurs*), and 35 African forest guards.

Forestry regulations applying to the Ivory Coast only were first issued in 1912, and again in 1927; but the decree of 4 July 1935 (Vol. I, p. 276) substituted a federal code for previous local regulations.

The area of the rain-forest of the Ivory Coast is approximately 40,000 square miles. There has been little pressure of population, and it is only in late years that serious attention has been paid to cocoa, coffee, and other crops, the extension of which tends to forest destruction. Government is fully alive to the importance of forest preservation, and it is thought that this, combined with controlled commercial exploitation, will not present the difficult problem that exists in the neighbouring Gold Coast. Of late years the Forestry Department has pursued a very active policy, and in 1937 there were some 7,000 square miles of forests reserved (*classée*), of which two-thirds were in the dense forest, the remainder being in wooded savanna country. For afforestation purposes considerable plantations have already been established by the department near Abidjan and Agboville, and it is proposed to plant an area of 150 square miles along the railway north of Abidjan.

North of the forest belt the country has been divided into three districts, in which native communities are encouraged to plant trees



67. *Sassandra: the beach*



68. *Grand Lahou: a ship off shore*



69. *Abidjan*



70. *Abidjan: the bridge across the Ebrié lagoon*

appropriate to the locality. It is claimed that this policy has had some success.

In the early years of the century exploitation created a serious labour problem. For some time 15,000 men were employed, communications and living conditions were bad, and recruits were only obtained under pressure from the administrative sources. A reduction in the scale of exploitation and the greater activity of the colonial inspection have done much to solve this problem. In 1936 there were 44 separate companies or firms at work cutting timber over areas amounting to 6,350 square miles, a total which had increased by the end of 1937 to 9,100 square miles. This area includes both concessions and temporary permits. In 1937 22,651 trees were felled, of which 6,917 were mahogany (*acajou*). This, the most valuable wood commercially, accounted for more than half the total timber exported (p. 296). The other woods are in considerable local use, and there exist 17 saw-mills to deal with them. Five of these are at Abidjan, two of which belong to the Government.

Mining

Minerals have hitherto played a very minor part in the economic development of the Ivory Coast, but a certain amount of gold is worked, principally by native methods. In 1935, the best of recent years, 1,929 fine oz. were exported. The total sank to 229 fine oz. in 1937. The only other mineral export in 1937 was 180 tons of copper concentrates.

At the end of that year the following permits were in force:

Personal licences	.	.	.	.	20
The Occupation System:					
Exclusive licences	.	.	.	.	63
Mining licences	.	.	.	.	7
Concessions	.	.	.	.	3
					— 73
The Royalty System:					
General licences	.	.	.	.	4
					— 4
Total	.	.	.	.	<u>97</u>

Education

The first schools were those opened by the Roman Catholics between 1893 and 1895 at Grand Bassam, Assinie, Jacqueville, and elsewhere. These were started by arrangement with the Government. This arrangement expired in 1903, and in the following year the first lay schools were opened. The Roman Catholics subsequently built nine schools for boys and one for girls.

Before the present system was put into force by an order in 1903 the total number of children receiving instruction was less than a thousand. In 1938 there were in Government schools 85 European teachers and 174 native. The numbers of pupils were as follows:

	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total pupils</i>
GOVERNMENT SCHOOLS				
<i>Primary</i>				
Village schools	54	4,121	451	4,572
Regional schools	23	3,513	616	4,129
Urban schools	3	726	192	918
Totals	80	8,360	1,259	9,619
<i>Higher Primary</i>	2	136	45	181
<i>Technical</i>	1	130	0	130
PRIVATE SCHOOLS				
<i>Christian</i>	22	..	..	2,739
<i>Moslem</i>	970	..	..	9,100

The Christian schools employed 77 teachers. The Moslem schools gave only the most rudimentary instruction to their scholars.

In addition, there is a training college for teachers at Dabou. This is managed by the Federal Government and serves all the colonies. In 1938 it had 47 students.

Much of the curriculum in all schools is occupied by practical training in agriculture or craftsmanship.

In 1938 the sum of 6,130,000 francs (£37,607) was spent on education.

Health

In 1938 the European medical staff comprised 39 medical officers, 1 dentist, 2 dispensers, 2 clerical officers, 1 midwife, and 11 nurses. The native medical staff consisted of 53 auxiliary doctors, 5 dispensers, 50 midwives, 65 visiting nurses, and 315 auxiliary nurses.

The following hospital accommodation exists:

	<i>European beds</i>	<i>Native beds</i>	<i>Total</i>
Abidjan	50	200	250
Grand Bassam	10	50	60
Agboville	10	20	30
Dimbokro	10	30	40
Bouaké	30	50	80
Bobo Dioulasso	15	100	115
Ouagadougou	10	50	60
Totals	135	500	635

In addition to the above there are also subsidiary hospitals, medical posts, and dispensaries. Some of these are under native auxiliary doctors and some are merely centres which are visited from time to time by European or native medical officers. In all, including maternity homes, about 1,350 beds were available in 1937 throughout the colony for native patients.

Just before the war broke out plans were ready for a new central native hospital, fitted with the most modern equipment, on the outskirts of Abidjan. The first section was designed to take 600 in-patients and the plans provided for ultimate extensions to accommodate another 600 beds.

Besides the fixed medical stations, travelling parties are engaged in fighting sleeping-sickness throughout the colony. This campaign is carried on by European doctors assisted by an auxiliary staff of native dispensers and nurses, who go through a course at Ouagadougou. In the colonial budget for 1937 10,500,000 francs were voted for health services.

Independently of the official services described above there are fifteen dispensaries maintained by various missions, and a voluntary Croix-Rouge committee at Abidjan assists in maternity and child welfare.

10. PORTS

TABOU ($4^{\circ} 28'$; $7^{\circ} 20' W.$). Provincial headquarters. Custom-house. Medical post. Meteorological station.

Tabou is a small trading station at the entrance to the Tabou river. The latter reaches the coastal belt west of the settlement, expanding eastwards into a narrow lagoon and flowing into the sea by a channel 150 feet wide. Dangerous rocks flank this channel, and only surf-boats can use it. On Tafou point, a low cliff where the river merges into the lagoon, stands a lighthouse of white stone. North of the channel is the Residency of the provincial commissioner. There is also a post and telegraph office.

Anchorage is south-east of Tafou point; but near the shore there is a shoal, and eastwards as far as the entrance to the lagoon a reef fronts the beach. There is a depth of 3 feet of water over the bar. The river is navigable by canoes for $9\frac{1}{2}$ miles.

Palm oil, palm kernels, rice, cocoa, and coffee are exported.

Communications

Road. A colonial road leads north to Guiglo (161 miles) and connects with the intercolonial system at Duékoué (179 miles). Tracks keep close to the coast as far as Bliéron, 12 miles to the west, and Sassandra, 100 miles to the east.

Sea. Tabou is a regular port of call for French mail and cargo boats. A vessel maintains frequent communication with Harper in Liberia.

Wireless. The wireless station is east of the lighthouse.

SASSANDRA ($4^{\circ} 56'$; $6^{\circ} 08' W.$). Population, 1,144. Provincial headquarters. Custom-house. Medical post. Wireless station. Regional School. Protestant and Roman Catholic missions. Weekly market.

The town of Sassandra occupies a narrow isthmus west of the river of the same name. The provincial commissioner's Residency and several trading compounds are on this neck of land. Southwards the coast bends round a sandy bay past the native fishing village of Ghezico to the headland of Swarton Corner. This bend forms a sheltered anchorage up to $4\frac{1}{2}$ fathoms close inshore near a jetty, cargo being handled by barges and by 26-foot surf-boats. There is also anchorage in 6-7 fathoms south-east of the Residency. The lighthouse stands on Swarton Corner at a height of 110 feet. In the town itself there is a mosque, a sawmill, and a post and telegraph office.

Communications

Road. A colonial road leads north to Gagnoa (85 miles) from east of the river mouth, and, by way of the settlement of Grand Drewin 6 miles westward, another one leads to Daloa (138 miles). Tracks run westwards to Tabou (100 miles) and eastwards to Grand Lahou (80 miles). The river mouth, $\frac{1}{2}$ mile wide, is crossed by a ferry.

Wireless. There is a commercial station.

GRAND LAHOU ($5^{\circ} 08'$; $5^{\circ} 01' W.$). Population, 3,486. Provincial headquarters. Custom-house. Meteorological station. Regional School. Protestant and Roman Catholic missions.

Grand Lahou has a considerable export trade, being the outlet for a large number of local villages. It is on the narrow strip of sandy coast (Plate 68) by the lagoon that lies close west of the Bandama.

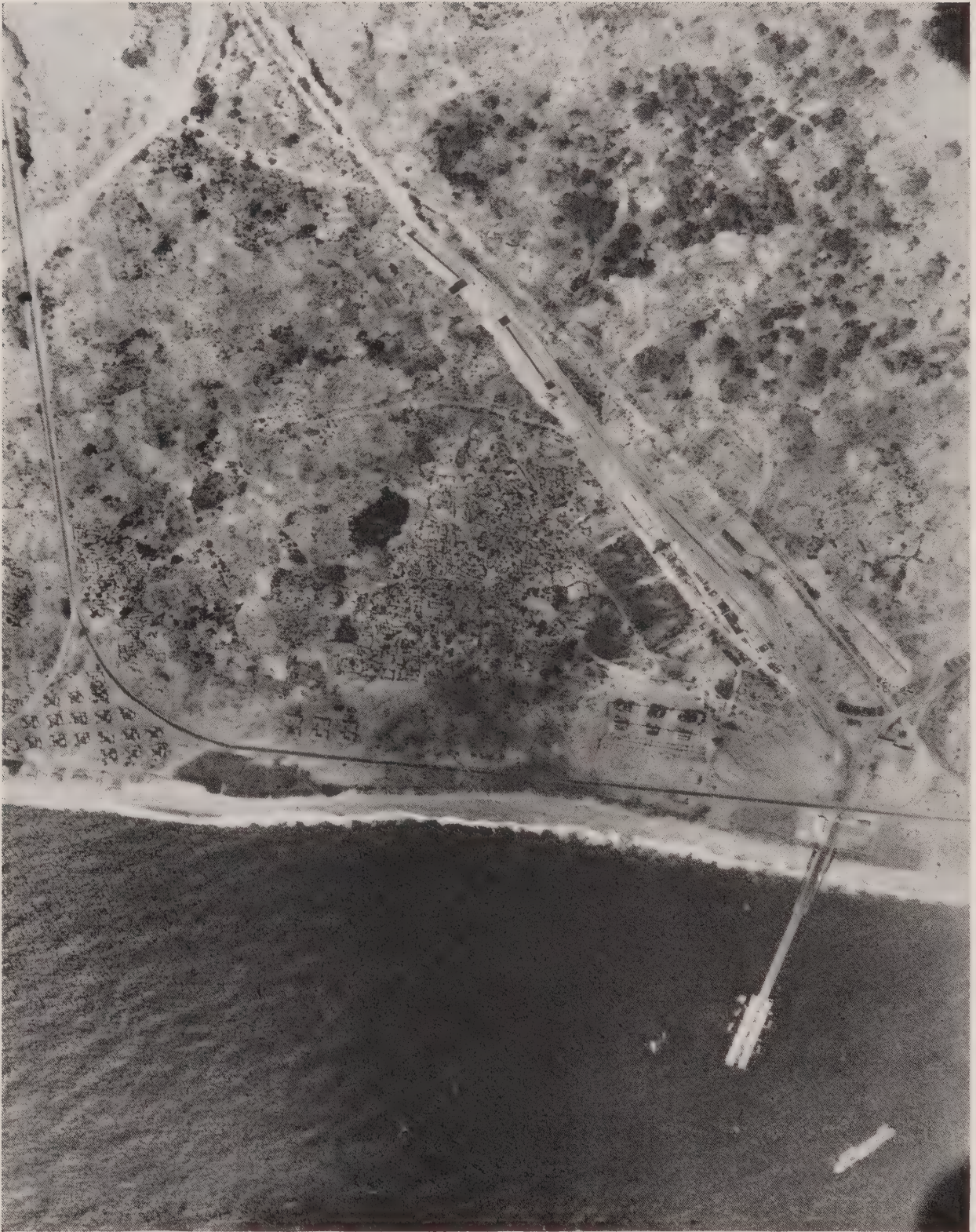
The European colony extends for a mile along the shore and is



71. *Abidjan: the Lagune Station*



72. *Abidjan: the gardens of Government House*



73. *Port Bouet*

separated from the beach by a wide road shaded by coconut palms. There is a sawmill, a post and telegraph office, and a lighthouse.

Communications

Road. A minor road leads north to Divo (60 miles) and a colonial road east to Dabou (56 miles), both on the intercolonial road. There are also some native tracks.

River. The Bandama is navigable by steam launch for 40 miles in the flood season and for 30 miles in the dry season.

Canal. The Asagny canal (Canal des Lagunes), opened in 1923, has its western entrance close to where the river enters its lagoons, and connects them to the Ebrié lagoon. It is 10 miles long and carries much traffic. By it there is a steamer service twice a week to Dabou, Abidjan, Bingerville, and Grand Bassam.

ABIDJAN ($5^{\circ} 19'$; $4^{\circ} 02' W.$). Population (1937), 26,143, including 1,478 Europeans. Colonial capital. Mixed Commune. Provincial headquarters. Custom-house. Chamber of Commerce of the Ivory Coast. Hospital. Military headquarters and barracks. Police headquarters. Meteorological station. Wireless station. Technical School. Regional School. Protestant and Roman Catholic missions. Bank of West Africa. Banque Commerciale Africaine. Hotels. Garages. Cinema.

The town of Abidjan (Fig. 35), with its large buildings and shady boulevards, occupies a small peninsula that juts into the north of the Ebrié lagoon between Banco bay and Cocody bay. During the last twenty years it has developed from a little fishing village into a well-planned modern town, and in 1934 it superseded Bingerville as the capital of the colony. This development has been largely due to the improvement of communications with Port Bouet. Goods brought from the interior were formerly unloaded at Abidjan and taken to Grand Bassam either in barges by the Ebrié lagoon or in lorries by the road through Bingerville. At Grand Bassam they were transferred to lighters and then re-loaded into ships anchored off the pier. To-day a railway and a good road connect Abidjan to Port Bouet, saving two-thirds of the distance and many hours of time.

The Town

The peninsula on which the town stands is about 1 mile square, and Government House, the two railway stations, the General Post

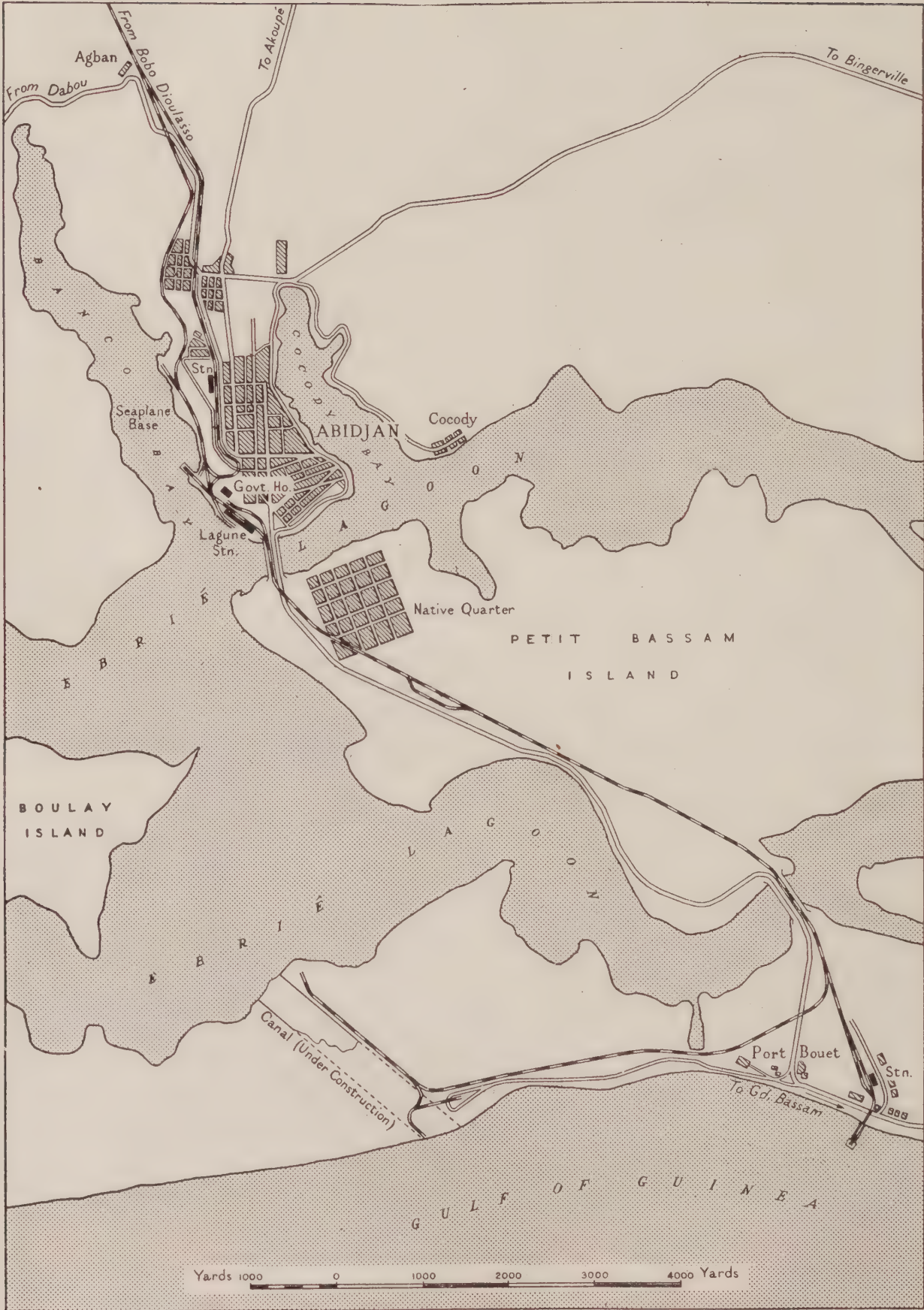


FIG. 35. Abidjan

Office, the meteorological station, the Chamber of Commerce, the European Club, and the hospital are all in this area (Plate 69). The Lagune station is opposite the north-western end of Petit Bassam island, to which the town is joined by a rail and road bridge. A causeway connects the south of the island to the coastal belt proper. The native quarter is on the north of the island, east of the bridge. Here also there are several small wharves.

Trade and Industry

Each year some 1,500 tons of fish are caught by local fishermen and sold in the town. Another 1,000 tons are smoked, and a further large quantity is exported to the Gold Coast. There is an ice factory, and there are also brickworks, soapworks, and sawmills.

Imports are mainly European goods for native consumption. Exports include palm oil, palm kernels, cocoa, copra, mahogany, kola nuts, bananas, coffee, and hides. Abidjan handles 5 per cent. of the total trade of the Federation.

Communications

Rail. The only railway in the colony runs north from Abidjan to Bobo Dioulasso (494 miles). There are two stations, Lagune and Ville, $1\frac{1}{4}$ miles apart.

Road. The intercolonial road runs west to Dabou (31 miles) and then north to Bouaké (242 miles) and Bobo Dioulasso (535 miles). In the other direction it runs alongside the railway to Port Bouet (7 miles) and then to Grand Bassam (31 miles). On the pontoon bridge it is 27 feet wide with two 5-foot pavements. A colonial road leads east-north-east to Bingerville (10 miles). There are daily bus services to Bingerville and Grand Bassam, and there is a service twice a week to Dabou and Grand Lahou.

Air. There is a seaplane base in Banco bay, with a hangar, a slipway, and repair shops. Aériomaritime flying boats run services to Dakar, Lagos, and Pointe Noire.

Wireless. There are two stations.

Shipping. Within the lagoon there are daily steamer services between Abidjan and Grand Bassam, and a new passenger wharf is being constructed just east of the bridge. Many shipping lines have offices in Abidjan, although their vessels call at Port Bouet. The following are the most important: America West African, Barber, Chargeurs Réunis, Elder Dempster, Fraissinet, Holland West Afrika, Libera Triestina, Société Navale de l'Ouest, Winck, and Woermann.

PORT BOUET ($5^{\circ} 15'$; $3^{\circ} 56' W.$). Custom-house. Native dispensary. Meteorological station.

Port Bouet is no more than a wharf and a roadstead. In 1932 it was opened as an essential part of the scheme to increase the export trade of the colony, and since then mail steamers have called there regularly instead of at Grand Bassam. The port is approached from seaward by the so-called 'Bottomless Pit' (p. 240). Close inshore there is a depth of 20 fathoms, but ships come no nearer than a mile offshore. Here they anchor in 16 fathoms on either side of the Pit, surf-boats being used to move passengers and cargo.

There is a lighthouse north-west of the landward end of the wharf, and there is a light at the head of the landing stage. A disused lighthouse, with a white beacon at its base, stands just west of the canal.

Wharf

The wharf (Plate 74) is 680 feet long and 40 feet wide, with a landing stage 105 feet wide extending 427 feet.

Equipment. Several railway sidings run up to the end of the landing stage, and on it are 10 cranes of from 5 to 20 tons capacity.

Communications

Rail. Port Bouet is the true terminus of the railway, and it is 7 miles from Abidjan Lagune station.

Road. By intercolonial road Port Bouet is 7 miles from Abidjan and 24 miles from Grand Bassam. A track leads westwards to Jacqueline and Grand Lahou.

Canal. In 1902, when the building of the railway was authorized, a canal from the Ebrié lagoon to the Bottomless Pit was also planned. This would, it was hoped, provide an outlet to the sea for the new products brought by the railway, and between 1905 and 1907 four attempts were made to cut it. Each time, however, rapid silting occurred. In 1908 the pier at Port Bouet was destroyed, the canal project abandoned, and traffic diverted to Grand Bassam. Four years later plans were drawn up for a new wharf to be built at Port Bouet and for the railway to be extended there from Abidjan. The war of 1914-1918 put a stop to these developments; but, afterwards, as the construction of the railway proceeded northwards, it became more urgent to have a deep-water port directly on the sea. In 1931, therefore, the cutting of the Vridi canal (Plate 62) was begun $3\frac{1}{2}$ miles west of the new wharf at Port Bouet. Difficulties again arose and the work was frequently interrupted; but by 1939 half the canal had been

cut from the lagoon end. Its completion may well be an early feature of the post-war programme. It is designed to be about 3,000 yards long and 400 feet wide. Apart from its use as a waterway, ships will be able to shelter in the lagoon when surf and swell are heavy in the open sea.

GRAND BASSAM ($5^{\circ} 11'$; $3^{\circ} 48' W.$). Population, 4,540, including c. 300 Europeans. Mixed Commune. Provincial headquarters. Custom-house. Law Courts. Hospital. Police headquarters. British Vice-Consulate. Regional School. Protestant mission. Roman Catholic Vicariate Apostolic of the Lower Ivory Coast. Private school. Bank of West Africa. Power station. Hotel. Garage. Daily market.

Grand Bassam (Plate 76), the second port of the colony, is 21 miles south-east of Abidjan and 13 miles east of Port Bouet. It stands on a neck of land between the Ouladine lagoon and the sea, immediately west of the mouth of the Comoé and of the exit of the Ebrié lagoon.

History

From 1700 to 1707 a French trading post was in existence. In 1830 Bouet-Willaumez began a series of survey expeditions from there into the interior, and in 1842 native chiefs ceded territory to him near Assinie and Grand Bassam. The towns themselves were occupied in 1843. Fifty years later Binger, the first Governor of the Ivory Coast, chose Grand Bassam as his capital; but in 1900 the seat of government was transferred to Bingerville.

Trade

Owing to the development of Abidjan and Port Bouet, trade has declined in recent years, and Grand Bassam now handles a mere 2 per cent. of the total trade of the Federation.

The chief imports are European goods for natives, and the chief exports are palm oil, palm kernels, copra, mahogany, cocoa, coffee, and kola nuts.

There is a sawmill and, near by, a sisal plantation.

Description of Port

The port is on the south shore of the Ouladine lagoon, which is too shallow for anything except small craft. There are two bridges across this strip of water, the western one being wide and built of concrete. It forms, in fact, an extension of a long tongue of land

that stretches into the lagoon. On the seaward side is an open roadstead with anchorage in 8-11 fathoms 2-4 cables offshore. Surf is often so heavy that lighters cannot be used.

Wharves and Equipment. An iron and timber wharf extends beyond the surf. It is 700 feet long and 25 feet wide with a landing stage 240 feet long and 65 feet wide. From its root an old pier stretches across the beach. There are several small wharves east of the bridges over the lagoon.

On the main wharf are six cranes with a capacity of from 5 to 10 tons and some Decauville tracks.

Lights. There is a lighthouse west of the Comœ and a light on a crane at the head of the wharf.

Communications

Road. The intercolonial road from Port Bouet (24 miles) to Assinie (46 miles) runs through the town. There is also a minor road to Bingerville (17 miles), which crosses the Ebrié lagoon (6 miles) by a ferry.

River. A bar at the river mouth prevents ships drawing more than 6 feet from entering the Ebrié lagoon, and the tortuous channel limits the length of such vessels. The river is navigable for large canoes as far as Alépé (30 miles).

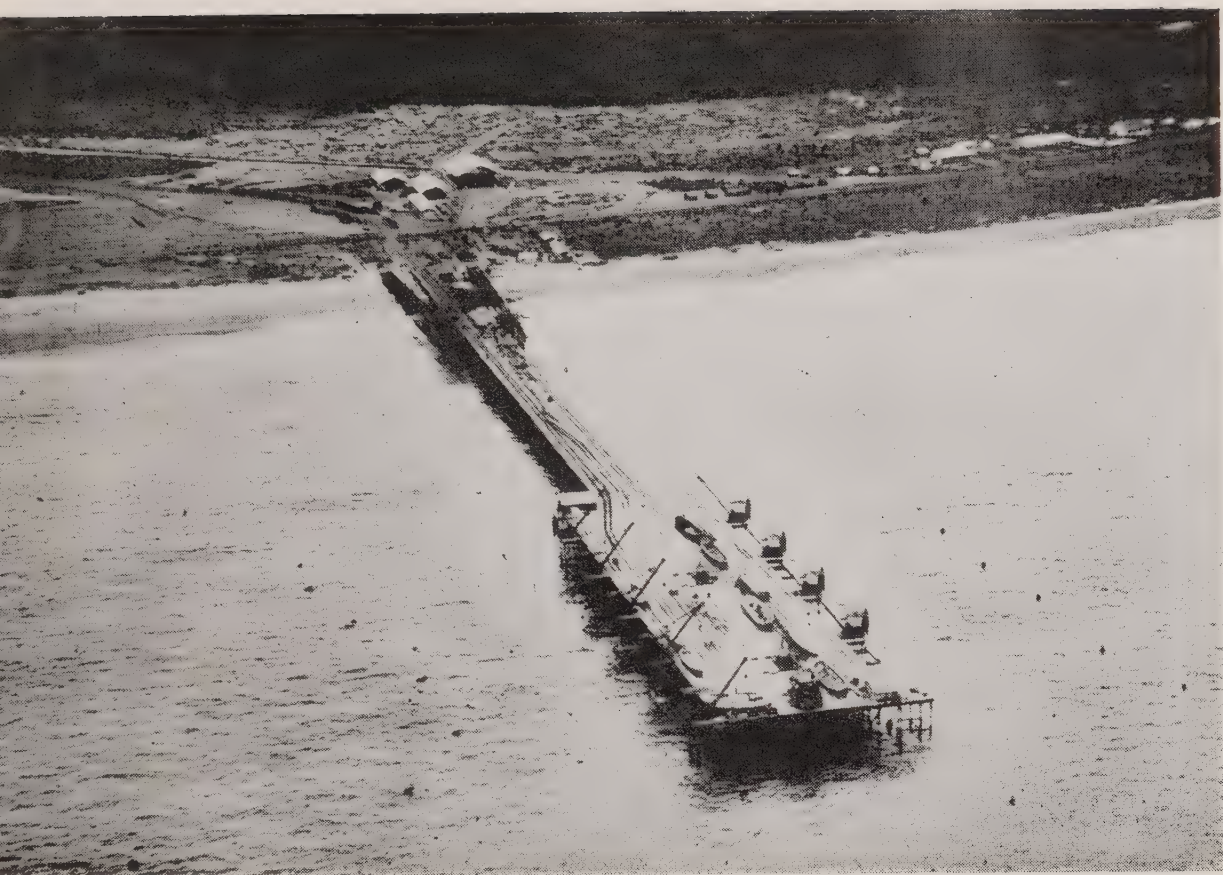
Lagoon. There is a daily steamer service to Abidjan and a weekly one to Grand Lahou.

Cable. A cable comes ashore $\frac{1}{2}$ mile west of the wharf. It communicates eastward with Cotonou and Lagos and westward with Monrovia and Conakry.

Shipping. Vessels of the Barber, Chargeurs Réunis, Elder Dempster, Fabre, Fraissinet, and Société Africaine des Transports lines call, but there are few regular services.

ASSINIE ($5^{\circ} 08'$; $3^{\circ} 18' W.$). Population, *c.* 1,200. District headquarters. Custom-house. Roman Catholic mission.

Assinie is a small town on the coastal belt and 30 miles east of Grand Bassam. The Bia (Assinie) river drains the Aby lagoon into the sea close westward. There are several warehouses, and ships anchor 4 cables offshore in the roadstead opposite them. The river bar is only possible for ships drawing up to 4 feet, and that alone in calm weather.



74. *Port Bouet: the wharf*



75. *Port Bouet: cranes on the wharf*



76. *Grand Bassam*



77. *Grand Bassam and the Ouladine lagoon*

The chief export is mahogany, but there is also a small trade in palm oil, palm kernels, rubber, gold dust, and ivory.

Communications

Road. Assinie is the terminus of the intercolonial road, which comes from Abidjan (77 miles) and ultimately from Bobo Dioulasso (612 miles). A rough road runs over the frontier into the Gold Coast.

Telegraph and Telephone. There is telegraphic communication with Grand Bassam, with Aboisso, and with the Gold Coast. Assinie is on the telephone system that includes Abidjan, Bingerville, and Dabou.

II. MINERALS

THE geological structure of the colony strongly resembles that of the Gold Coast. This resemblance, however, is not reflected in the degree of mineralization that the rocks have undergone; for, so far as is known at present, the French territory has no large mineral deposits. Gold has been worked by the natives for many centuries; copper, manganese, bauxite, and iron ore have been discovered by recent surveys; and a few diamonds have been found; but European exploitation has hitherto been confined to small-scale operations for copper and gold.

Gold. The principal gold workings are in the east of the colony, especially in those districts where the Nzi, the Comoé, the Black Volta, and their tributaries flow through country formed of metamorphic schists and greenstones. These schists contain mineralized belts with quartz, cupriferous pyrites, galena, and gold close to the zones of contact with later granitic intrusions. Auriferous quartz veins have been exploited in some places, but most of the mining is in alluvial gravels and sedentary lateritic conglomerates. The Société Minière et Immobilière de la Côte d'Ivoire, employing about a hundred natives, has washings at Kokoumbo, west of Toumodi, and in 1937 there was a production of about 13 oz. Troy per month. In the same year other European companies engaged in prospecting alluvial and vein deposits gave some 200,000 man-days of employment to natives. The total export was 229 oz. Troy.

Copper. Near Gaoua copper ore (chalcosine and its oxidation products), bearing 3 per cent. copper and one-thirtieth of 1 oz. Troy per ton, occurs in greenstones. This is worked by the Compagnie Équatoriale des Mines, which employed 2 Europeans and 100 natives

in 1937. In the same year 180 tons of concentr  s (35 per cent. copper) were exported, valued at 400,000 francs (£3,213).

Other Minerals. Lateritic iron ores are still smelted in the north of the colony, but this ancient native industry has decayed as a result of the competition of imported iron. Indeed the latter is often re-fashioned by native smiths. Ouagadougou and D  dougou are the principal centres of this trade, and furnaces at and near Bobo Dioulasso supply enough metal for local needs; but in the districts where gold-mining forms a more remunerative occupation only a few furnaces now remain.

Deposits of magnetite in the Man mountains and elsewhere are too inaccessible for European exploitation. Reference has been made in Volume I, pp. 294 and 297, to occurrences of manganese ore and of bitumen.

12. AGRICULTURE

ECONOMIC agriculture is practised here far more than in any other colony in the Federation. This is because both the rain-forest and the savanna are suitable to the cultivation of money crops. Broadly speaking, the former corresponds to the manioc zone and the latter to the millet zone. In the manioc zone the chief crops are manioc, cocoa, yams, maize, bananas, and oil palm, with rice in the south-west and coffee in the south. In the millet zone maize, shea butter, and millet are the main products.

The immense rain-forest furnishes the colony with an almost unlimited amount of valuable timber. If the means of transport were better developed and if sufficient labour were forthcoming, there would be tremendous scope for this industry, for there are ready markets in Europe and in America.

With regard to livestock, the colony is almost entirely in the tsetse belt, and cattle are therefore few and of the small, humpless breed. Sheep, goats, and poultry, however, survive in most districts, and the Native Provident Societies do much to encourage the improvement of stock. In fact, agriculture as a whole is well organized, and there are many nurseries experimenting with all the important crops.

Food Crops

Coco-yams. There are two kinds of this tuberous plant, the old coco-yam (*Colocasia esculentum*), and the new (*Xanthosoma sagittifolium*). The old is known to have come from Egypt some centuries

ago and originally to have been native to India. It is a decorative plant, its pale green leaves being peltate, i.e. attached to the stalk at the centre. It grows to a height of about 6 feet and is planted in ridges. Before being cooked the tubers or corms have to be soaked to remove acidity. The new variety was brought comparatively recently from the West Indies and its leaves are dark green and sagittate, i.e. attached to the stalk at the base. The tubers have not the same irritating properties as those of *Colocasia* and may be ground into meal. *Xanthosoma* also gives a bigger yield, but only thrives in places where there is a prolonged rainy season. Both kinds provide an excellent shade crop for young cocoa trees.

Plantains. Plantains (*Musa sapientum* var. *paradisiaca*) were introduced from Asia long before the banana. They are a staple food in this colony as well as in any part of the Federation having a rainfall of over 40 inches. The plantain tree is scarcely distinguishable from the banana tree, although it is usually taller and less productive. The suckers take about a year to mature and bear for only about 5 years. The fruit is larger and coarser than the banana and is eaten cooked, when unripe and containing the maximum of starch. The skins, which are rich in potash, are dried and used in making soap and snuff. The stem provides a strong fibre.

Other subsistence crops grown on a considerable scale, but described elsewhere, are bananas and manioc in the south, rice in the south-west, maize and millet in the north, ground-nuts in the savanna, and yams everywhere.

Economic Crops

Cocoa. This is by far the most important crop of the colony, which grows almost all the cocoa of the Federation. It is entirely produced for export and is cultivated mainly in the rain-forest belt. It was introduced from the Gold Coast about 1870 and, until the railway was built, the crop was sent by the old caravan routes to the ports of Grand Lahou and Assinie; to-day it is forwarded mainly by rail through Abidjan to Port Bouet. More than half of the crop is brought by road to Agboville station, 51 miles north of Abidjan. Cultivation began in the old province of Indenié and gradually spread west and south, but it was not till after the war of 1914-1918 that production was intensified. The then Governor, M. Angoulvant, noting the thriving cocoa industry of the Gold Coast, almost forced the natives to grow cocoa (*Theobroma* spp.) on a large scale. The result was so

successful that within ten years it became the third money crop of the Federation. In 1937 Native Provident Societies distributed 157,000 young trees to native growers. Production rose from 16,315 tons in 1929 to over 50,000 tons in 1938. This is, however, only about a fifth that of the Gold Coast. *T. Leiocarpa*, which originated in Brazil and in Dutch Guiana, is the chief species grown. Production is mainly in native hands, although there are a few European planters. The young trees (Plate 66) are often planted between oil palms, plantains, bananas, or coco-yams, which are removed when the cocoa trees are strong. The only attention necessary is regular pruning. The tree should bear fruit at 5 years and continue for at least 20 years. The method of harvesting and treating the beans is given in Volume I, p. 322. The industry has been put on such a sound footing that, in 1938, production was valued at £992,500 or £13,700 more than the combined value of the six other important products, viz. coffee, palm kernels, ground-nuts, plantains, cotton, and timber. When greater attention has been paid to the selection of trees, production should increase still more. Experience elsewhere shows this to be the case. In Trinidad, for example, the least yield per acre is one ton of cocoa. Furthermore, no tree is selected unless it produces 1 lb. of cocoa to seven pods, even though this may mean the selection of only one tree out of 500 examined. In Nigeria, on the other hand, it may take over 500 pods to produce 1 lb. of cocoa, and there is no reason to suppose that conditions in the Ivory Coast are any better.

Coffee. This plant (*Coffea*), unlike cocoa, was introduced by Europeans and was first grown in the west. Fifteen years ago the natives began to grow coffee in small forest clearings, and were encouraged by the Native Provident Societies, which distributed large numbers of young plants. No instruction was given, however, in the method of cultivation, with the result that disease ruined a large proportion of native plantations and threatened European ones. As a result, full development of the industry was seriously delayed and its peak has not yet been reached. An alternative policy has accordingly been pursued, and since 1938 strict inspection has been carried out. Coffee now flourishes south of latitude 8°, chiefly in the east and centre and on the lower slopes of the Man mountains. In these districts there are formations of amphibolites and pyroxenites, which weather to a rich red soil. The various forms of *C. robusta* are well suited to local conditions. *C. liberica* is now only found wild, as a hybrid from this species crossed with a 'plateau' variety has proved better for cultivation. *C. arabica*, often called Brazilian coffee, and *C. stenophylla*

grow only in the hills. The wood of these species is used for furniture and for walking-sticks. *C. excelsa* is grown mainly in Abengourou province. Coffee seedlings need careful transplanting owing to their long tap root. They require a sheltered position in rich, well-drained soil. After two years the plants are 'topped' and kept pruned to a height of 4 or 5 feet to facilitate picking. Berries are picked from two years onwards, according to the species. The yield per acre varies likewise, one young plantation giving 71 lb. of *arabica*, 177 lb. of *excelsa*, and 265 lb. of *liberica*. In 1937 Native Provident Societies distributed 3,500,000 plants to their members. There are two methods of preparing the berries for market, the dry and the wet. The former is reputed to produce the better quality beans. The berries are dried in the sun for several weeks and then hulled in a mortar. The husks are separated by winnowing. By the wet method the berries are bruised in rollers, fermented in bins, and then washed, drained, and dried. Machinery has lately been introduced for the preparation of the beans. Europeans have their own, whereas native planters usually borrow from their Provident Societies. Commercially coffee is distinguished by the size of the bean rather than by the species. In 1939 production was some 15,000 tons.

Bananas. As a commercial proposition bananas are grown almost entirely by Europeans, and, in contradistinction to French Guinea, plantations are owned by individuals rather than by companies. The chief areas under cultivation are in the provinces of Abidjan, Agboville, and Sassandra. The small Chinese or Canary banana (*Musa nana*) is the species cultivated.

Ground-nuts. Ground-nuts have only been produced for export since 1933. They are grown in those parts of Korhogo province which are within easy reach of the railway. They are less remunerative than cocoa or palm oil, and heavy transport costs would make their growth completely unprofitable. As it is, the crop is carried unshelled so as further to reduce transit dues. In 1936 21,500 tons were put on the railway.

Oil Palm. This industry is almost entirely run by natives. Production in 1937 was 13,992 tons of kernels and 5,111 tons of oil. The experimental plantation at Dabou is the only one in European hands.

Shea Butter. The shea-butter tree (*Butyrospermum parkii*) plays an important part in native economy, the women and children being in charge of the butter production. This is for home consumption, but the kernels are mainly exported. In 1937 the export figure was 9,317 tons, larger than for any other colony in the Federation.

Other important economic crops are kola, grown in the south; cotton, round Korhogo and in the provinces of Bobo Dioulasso and Ouagadougou; sisal, north of Bouaké; sesame; and kapok.

Timber

How vast a field could be included under this heading may be judged by the fact that up to date 3,000 species of forest vegetation have been catalogued. Over 1,000 are large trees, but only 15 of them are at present exploited. Of these the most important is mahogany. The timber industry, though only organized within the last twenty years, has become one of the outstanding features of the Federation and production is only limited by the difficulty of transport (Plate 80) in the rain-forest. Logs are usually brought to Port Bouet by railway, but the lagoons and, when necessary, the rivers are also used.

The Forestry Department, inaugurated in 1924, has accomplished much. Since 1926 intensive silvicultural operations have been carried out, mainly in the large forest reserves. The line method of silviculture has proved the most successful. Parallel lanes 10 feet wide and 33 feet apart are cut through the forest, letting in light on either side. If these were left open to the sky too much moisture would be sucked out of the ground; so young trees, 5 or 6 feet in height, are planted in the lines, which make ideal nurseries. The most important species cultivated are mahogany (*Khaya*), avodiré (*Turraeanthus africana*), walnut (*Lovoa klaineana*), red cedar or nian-gon (*Tarrietia utilis*), satinwood (*Terminalia ivorensis*), and the Meni oil tree (*Lophira alata*). These woods are all hard and durable and have many uses. All but satinwood are insect-proof, and red cedar is fire-resistant. Of the several kinds of true mahogany *Khaya ivorensis* is the most valuable and most exploited. It is the best-figured of all the mahoganies and is the *acajou* of French commerce. It has been found very useful in aircraft construction. African teak or iroko (*Chlorophora excelsa*) is also common in the forest belt. It is a heavy wood, suitable for outdoor uses such as railway sleepers, and is one of the most valued trees for local furniture and building purposes. Superficially it resembles Burma teak, but it lacks the oil of the latter and is commercially much less valuable.

Forest Reserves. The chief forest reserves in the rain-forest belt are the Banco reserve (8,000 acres) east of Abidjan, the Yapo reserve (c. 30,000 acres), and the Mamba reserve (40,000 acres). The two latter are respectively west and east of the railway and extend



78. *Grand Lahou: mahogany logs awaiting shipment*



79. *Shipping logs*



80. *Hauling logs: old style*



81. *Hauling logs: new style*

along it from 24 to 37 miles north of Abidjan. Other and smaller reserves are at Bamo and de la Rasso in Agboville province, near Dimbokro; and at Bamoro and Kokondekro near Bouaké.

There is also a special reserve opened in 1934, of 620 acres, in the savanna near Firkessédougou. The timber is grown chiefly as fuel for the railway and for afforestation purposes. Some of the species treated are dry-zone mahogany or cailcédrat (*Khaya senegalensis*), cassia (*C. sieberiana*), lingué (*Afzelia africana*), teak, kerkété (*Anogeissus schimperi*), akee (*Blighia sapida*), koko (*Albizzia lebbek*), West African ebony (*Diospyros mespiliformis*), the tallow tree (*Detarium senegalense*), and various kinds of satinwood.

In 1933 a nursery was started in the Poa reserve near Bobo Dioulasso, and in 1934 a plan was formulated to organize village nurseries in the area north of the rain-forest belt. This area was divided into three regions, each of which was ordered to grow certain species. These regions now are (i) the provinces of Bouaké and Séguéla, which grow teak and akee; (ii) the provinces of Bondoukou and Korhogo, which grow teak, dry-zone mahogany, and the shea-butter tree; and (iii) the provinces of the Upper Ivory Coast, which grow dry-zone mahogany and the shea-butter tree.

Some idea of production may be gained from the following figures. In March 1939, 394 tons of timber were shipped from Grand Bassam to Bordeaux, 122 tons from Assinie, and 103 tons from Grand Lahou. In the same month Le Havre imported 7,000 round logs and 4,000 squared ones.

Livestock

The only part of the colony lying outside the tsetse belt is the thornland. Hence there are fewer cattle than in any colony of the Federation except Dahomey and Mauritania. In 1938 the number was 240,000 and these were mainly the small, humpless breed. For the same reason there were only 2,000 horses and 500 donkeys. Sheep and goats, being immune to the tsetse, provide almost the only meat for the natives in the forest belt, and in 1938 they numbered 900,000. Pigs are bred in the non-Moslem districts and number 36,000. Poultry of various kinds, but mainly guinea-fowl, turkeys, and Rhode Island Reds, are reared throughout the colony. There are animal-husbandry stations at Bouaké, Korhogo, and Bobo Dioulasso, and stud farms at Kaya, Gaoua, and Batié. Native Provident Societies make regular grants for the improvement of livestock.

Experimental Stations

The following are the chief experimental stations:

Gagnoa	.	.	.	.	.	coffee, cocoa, bananas
Man	.	.	.	.	.	coffee, cocoa, quinine
Saria	.	.	.	.	.	apiculture
Firkessédougou	.	.	.	.	.	cotton (var. <i>budi</i>)
Bouaké	.	.	.	.	.	cotton (var. <i>ishan</i>)
Korhogo	.	.	.	.	.	cotton
Banfora	.	.	.	.	.	rice
La Mé	.	.	.	.	.	oil palm
Bingerville	.	.	.	.	.	general

There are farm schools at Bobo Dioulasso, Dédougou, Koudougou, and Banfora.

13. COMMERCE AND FINANCE

COMMERCE

The Balance of Trade. In 1938 both the weight and value of the exports were more than double those of the imports, for 116,115 tons of goods worth 305,918,000 francs were imported and 323,812 tons worth 686,053,000 francs exported. Previous years had showed the same tendency less well-marked. The grand total for *Commerce Spécial*, 991,971,000 francs (£6,085,712), was second only to Senegal and French Sudan.

Firms. The principal trading firms are the Compagnie Française de l'Afrique Occidentale, the Compagnie Française de la Côte d'Ivoire, the Société Commerciale de l'Ouest Africain, and the Société Commerciale et Industrielle de la Côte d'Afrique.

Exports. The ivory which gave its name to the colony is no longer of prime importance, and to-day the principal export is cocoa, of which 47,305 tons (i.e. over 99 per cent. of the total for the Federation) were exported in 1937 and 51,887 tons in 1938. More than half of this goes to France, but a considerable quantity is taken by the United States of America. Timber is also important, 46,317 tons of mahogany (*acajou*) and 34,298 tons of other woods being exported in 1937 to a total value of 32,269,882 francs. Coffee is relatively very valuable, the 9,921 tons exported in 1937 being worth 50,397,255 francs. On an average some 30,000 head of cattle are annually exported, mainly to the Gold Coast. The systematic encouragement of the growth of bananas has resulted in the phenomenal increase of the quantities exported from 192 tons in 1933 to 4,291 tons in 1935 and to 12,079 tons in 1938. Other products are shelled ground-nuts and cotton.

Imports. The principal imports are similar to those of most of the other colonies, namely cotton cloth and manufactured metal articles. The cloths are mainly in small pieces, the long guinées so popular in the north finding but a small sale. In 1937 1,310 tons of cloths were imported, valued at 44,233,388 francs. Metal goods, machines, and machinery were worth 61,172,655 francs, but the weight was not given, except in the case of the 6,882 tons of iron goods (*fers*). The chief foodstuffs imported were wheat-flour and rice, with wine for the European residents. Oil fuel, building materials, motor vehicles, and tyres were also prominent. Further details are given in Appendix A.

FINANCE

Revenue and Expenditure. The Budget for 1938 balanced at 129,510,000 francs (£794,540). The only available details are as follows:

	<i>Revenue</i>	<i>Francs</i>
I. Ordinary Revenue		
Direct taxes	58,980,000
Customs and excise	34,828,000
Posts, telegraphs, &c.	7,490,000
Grants and subsidies	6,480,000
Receipts from previous financial year	180,000
II. Extraordinary Revenue		
Sundry receipts	200,000
Previous withdrawals from the Reserve Bank	19,552,000
Receipts for special purposes	1,800,000
TOTAL	129,510,000
	<i>Expenditure</i>	<i>Francs</i>
I. Ordinary Expenditure		
Debt charges	727,000
Salaries of administrative staffs	28,833,000
Other administrative expenses	7,940,000
Posts, telegraphs, &c. (salaries and wages)	13,523,000
Posts, telegraphs, &c. (plant and materials)	7,350,000
Public works	13,963,000
Social and economic departments (salaries)	13,120,000
Social and economic departments (other expenditure)	11,762,000
Sundry disbursements (salaries)	280,000
Sundry disbursements (plant and material)	10,340,000
Special funds	10,000
Unforeseen expenses	110,000
II. Extraordinary Expenditure		
Extraordinary expenditure	19,752,000
Works carried out from the receipts for special purposes	1,800,000
TOTAL	129,510,000

The actual objects of the expenditure were shrouded in their customary obscurity, but this Budget has the largest total of any of the Local Budgets of the Federation. In most years it balances at a slightly lower figure than that for Senegal.

Taxation. The poll-tax is fixed annually and varies with the local economic situation. In 1938, for example, it was fixed at 10 francs for the poor provinces of Kaya and Gaoua and at 75 francs for Abengourou. Since 1 January 1938 there has been an income tax, starting at 100 francs *per annum* for persons with an income of 6,000 francs. There is also a surtax on incomes over 15,000 francs, with a sliding scale which climbs to 20 per cent. on incomes over 400,000 francs.

The Reserve Bank. On 30 June 1936 the Reserve Bank had a balance in hand of 31,292,523·97 francs. During the following year receipts amounted to 13,887,372·28 francs and expenditure to 17,630,626·83 francs. This left a balance on 30 June 1937 of 27,549,269·42 francs.

14. COMMUNICATIONS

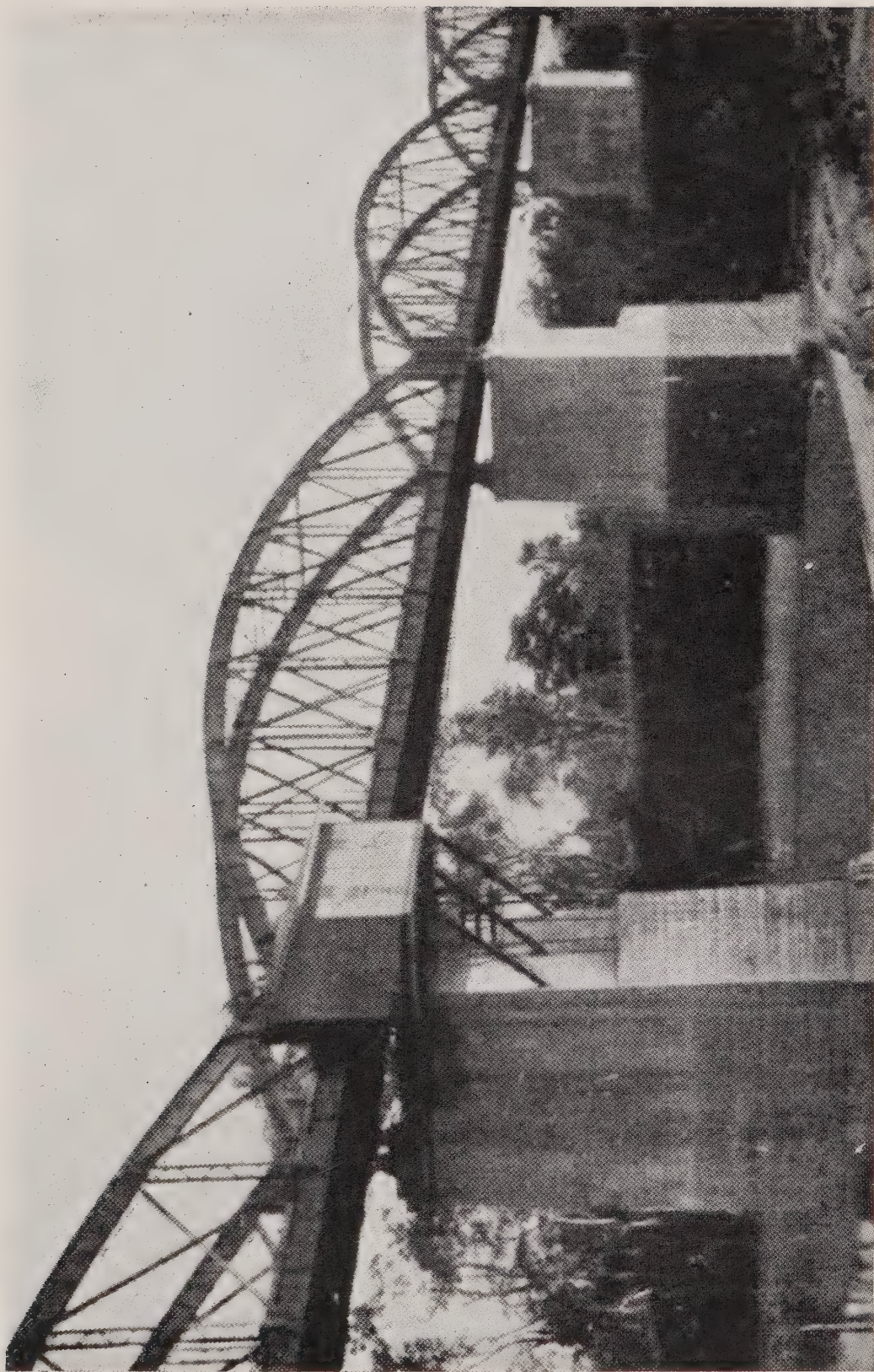
RAILWAYS

THE only railway is that from Port Bouet and Abidjan to Bobo Dioulasso.

History

As soon as the French obtained control of the southern half of the colony it became obvious to them that the best method of penetrating the thick forest country would be by means of a railway. Some preliminary surveys were made, and in 1893 Capt. Marchand proposed a scheme to build a line from Grand Lahou to some point, such as Tiékongoba, on the Bagoé. Any possibility, however, of this scheme being put into execution was destroyed by the activities of Samory. After the capture of that termagant in 1898 the question of a railway again came to the fore.

Binger appointed Commandant Hondaille to make a new survey, and several proposals were put forward; but it was not until 1902 that the final plan was officially approved. The sum of 10,000,000 francs (£39,650) was allocated, and work began with 2,000 natives recruited in French Guinea and Dahomey. Beginning at Abidjan, in 1905 the line reached Agboviile, then called Ery-Macouguié, in



82. *The railway bridge across the Nzi at Dimbokro*



83. *The intercolonial road through the forest*



84. *Bridge across the Sassandra*

1909 the Nzi, and in 1910 Dimbokro. The last section needed 4,000 more natives and a further 32,000,000 francs (£116,880).

The original object of the railway was simply to make a way through the forest, but the idea of making a connexion with the Niger itself gradually came into being. To what extent this connexion is desirable is a matter for debate. From a military point of view it would undoubtedly be an asset; but from a commercial point of view it is somewhat improbable that there would be very much through traffic or that Abidjan could ever hope to compete with Dakar.

An extension to Bouaké was authorized in July 1908, but, owing to native insurrections, the line was not opened until 20 August 1913. Here the railhead remained for ten years. In 1923 it was decided to build a further extension, and, by using some 6,000 labourers, good progress was made from the start. The line reached Katiola on 12 January 1924, Niangbo on 6 May 1926, Tafiré-Soba on 1 January 1928, Firkessédougou on 1 January 1930, and Bobo Dioulasso on 1 January 1934.

Extensions. Many extensions have been suggested, and a conference of governors at Dakar in November 1936 approved the simultaneous construction of lines to Douna and to Ouagadougou. Preliminary levelling has already begun on the latter; but the extreme shortage of material makes it reasonably certain that the track will not actually be laid until after the present war is over.

Permanent Way, Locomotives, and Rolling-stock

Permanent Way. The gauge is one metre. Gradients do not exceed 1:40, and the minimum radius of curves is 393 feet. The newest sections of the line are the best engineered. The rails are of hard steel, 20 feet (6 metres) long and weighing 51 lb. per yard (25·5 kg. per metre).

Locomotives. In 1939 the following locomotives were in service:

Hain St. Pierre (Golwé)	.	.	.	.	4
Cail	.	.	.	.	44
Corpet-Louvet	.	.	.	.	14
Bandet Dono (Diesel)	.	.	.	.	2
Total	.	.	.	.	64

Nothing is known of their types, wheel arrangements, or weights. Wood is the commonest fuel.

Carriages and Wagons. In 1940 there were 37 passenger coaches and 482 goods wagons.

<i>Distance from Abidjan</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
11.5	7	..	PORT BOUET	The extension from Port Bouet goes over Petit Bassam island and then crosses the principal arm of the Ebrié lagoon by a bridge 1,200 feet long, 700 feet of which are supported by pontoons.
0	0	..	ABIDJAN LAGUNE	
2	1 $\frac{1}{4}$	..	ABIDJAN VILLE
13	8	..	ABOBO	
17	10 $\frac{1}{2}$	413	..	
24	15	341	ANYAMA	
26	16	..	..
40	25	..	..
43	27	161	AZAGUIÉ	
64	40	302	YAPO	
73	45	The main line proper starts from the Lagune station, which is at the quayside. It twists through the town to the Ville station. There is a set of sidings connecting with the seaplane base on the west, and a track from there links up with the main line just north of the town. The line then climbs over the forested hills to Anyama. A number of minor tributaries of the Mé are crossed, notably the Bété at 16 miles and the Fiofo at 25 miles. Each of these has a bridge of one 49-foot span. After this the line assumes a north-westerly direction, descending gently. At 45 miles the Yapo is crossed. At Agboville, which is on the left bank of the river, there is a goods shed. Half a mile beyond the station the Agneby is crossed by a bridge of 3 spans each of 82 feet. The line climbs rapidly to a cutting 39 feet deep near the crest of the watershed between the Agneby and Nzi rivers. The forest gradually thins out into more open country, and the line makes its way through
82	51	180	AGBOVILLE	
83	51 $\frac{1}{2}$	158	..	
101	63	279	RUBINO	
110	68	452	..	
125	78	367	CECHI	
140	87	338	ANOUMABA	

<i>Distance from Abidjan</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
162	101	302	TIÉMÉLEKRO	some rough savanna down the slopes of the Nzi valley. The river itself is crossed by a bridge (Plate 82) of 6 spans each of 138 feet and 39 feet above the water.
180	112	..	..
183	114	325	DIMBOKRO	At Dimbokro there are goods sheds and an engine shed. Running almost due north, the line gradually makes height. Between Boli and Raviart two small tributaries of the Kplara river are crossed by two bridges, both of 3 spans each of 82 feet. The line, now a little west of north, continues to rise to Bouaké, which is the highest point for many miles round. Here there are goods sheds and an engine shed. Bamoro station is 3 miles west of its village. The line falls to the M'Bé, but twists north to climb to Katiola. From Tiengala the line runs mainly north-north-west to Niangbo. The country is hilly and several minor tributaries of the Nzi are crossed. For the remainder of its route the railway is in close company with the road. Beyond Firkessédougou it is on or near the watershed between the Bandama and Comoé rivers. After Ouangolodalgou it bears north-east and drops down to cross the Leraba river. It rises and then falls again first to cross the Comoé and then to follow its left bank up to
206	128	377	NOFOU	
229	142	548	NDOKOUASSIKRO	
253	157	640	BOLI	
277	172	632	RAVIART	
298	185	788	KAN	
316	196	1,204	BOUAKÉ	
336	209	994	BAMORO	
350	217	886	TOURO	
371	230½	1,037	KATIOLA	
396	246	938	TIENGALA	
408	253½	1,076	KIONAN	
453	271½	1,086	NIANGBO	
465	289	1,270	NIÉDIÉKAHA	
488	303	..	TAFIRÉ-SOBA	
558	347	1,099	FIRKESSÉDOUGOU	
583	362	..	NIALLO	
606	376½	1,066	OUANGOLODALGOU	
635	394½	869	KAOURORA	
675	419	..	DANGOUADOUGOU	

<i>Distance from Abidjan</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
698	434	932	BANFORA	Banfora. From there it climbs the scarp of the Sikasso plateau to reach Bobo Dioulasso, where there are goods sheds and an engine shed.
773	480	..	DASALAMI	
795	494	1,427	BOBO DIOULASSO	

ROADS

As Fig. 28 suggests, the colony is exceptionally well equipped with roads. The quality of the surface is not usually good, and, in addition to the roads shown, there is a number of tracks, many of which are motorable in the dry season.

Intercolonial

There are 1,532 miles (2,466 km.) of intercolonial roads within the colony. Three routes can be distinguished.

Itineraries. The first, a section of the through route from Conakry to Niamey, enters from French Sudan, 29 miles east of Sikasso. It then runs eastwards to Bobo Dioulasso (79 miles) and turns approximately north-east to Houndé (151 miles), Boromo (201 miles), Sabou (254 miles), and Ouagadougou (309 miles). From there it goes more directly east to the border of Niger (408 miles), 38 miles west of Fada N'Gourma. At 386 miles there is a branch south-south-east to Tenkodogo (420 miles) and the border of Togo (502 miles), 68 miles short of Sansanné Mango.

The second runs from Bobo Dioulasso in a mainly southerly direction, passing through Banfora (52 miles), Kaourora (109 miles), Ouangolodougou (119 miles), Firkessédougou (147 miles), Niangbo (205 miles), Katiola (258 miles), Bouaké (293 miles), Tiebissou (336 miles), Toumodi (391 miles), and Tiassale (445 miles) to Dabou (504 miles). Here it turns eastwards to follow the inner coast to Abidjan (535 miles). Crossing to Port Bouet (542 miles) by two joint bridges with the railway, it resumes its easterly course to Grand Bassam (566 miles) and Assinie (612 miles).

The third comes in from French Guinea 11 miles south of N'Zo. It follows a somewhat sinuous route through Danane (25 miles), Man (76 miles), Duékoué (132 miles), Daloa (198 miles), Gagnoa (289 miles), and Divo (345 miles) to Tiassale (386 miles). At this place it joins the other road to Abidjan (476 miles).

Colonial

Of the many colonial roads four are worthy of some detailed notice.

Itineraries. One begins, in effect, at Bobo Dioulasso, although its first 48 miles are intercolonial. It then branches south-east to Diébougou (96 miles), and thenceforward runs roughly parallel to the frontier of the Gold Coast. It goes through Gaoua (143 miles), Bouna (250 miles), Bondoukou (377 miles), Abengourou (499 miles), Zaranou (524 miles), and Aboisso (606 miles). It joins the intercolonial road 27 miles from Assinie (663 miles).

Another begins at the border of French Sudan, 98 miles south-east of Bougouni. It passes through Boundiali (89 miles), Séguéla (221 miles), Vavoua (265 miles), and Daloa (299 miles). From that place to Issia (329 miles) it is intercolonial, but from there it goes south to reach Sassandra (437 miles).

A cross route is afforded by a road which starts at the border of French Guinea, 42 miles south-east of Beyla. It goes through Touba (36 miles), Séguéla (117 miles), and Beoumi (211 miles) to Bouaké (249 miles) and Ouellé (342 miles).

The fourth provides a great rarity, the crossing of an international frontier. It comes in from French Sudan, 44 miles south of Ouahigouya, and runs through Yako (10 miles) and Ouagadougou (73 miles) to Po (174 miles). It is then 17 miles north of the frontier (191 miles) of the Gold Coast, itself 10 miles north of Navrongo.

Bus Services

Table VI shows the principal bus services in 1939. In addition there were some local services of a less reliable nature.

TABLE VI. *Bus Services*

<i>Route</i>	<i>Service</i>
Abidjan-Grand Bassam	Daily. Journey time: 1 hour.
Abidjan-Bingerville	Daily. Journey time: 1 hour.
Abidjan-Dabou-Grand Lahou	Twice weekly.
Man-Séguéla-Vavoua-Beoumi-Bouaké	Weekly.
Bobo Dioulasso-Boromo-Ouagadougou	Weekly.
Bobo Dioulasso-Gaoua-Bouna	Weekly.
Bobo Dioulasso-Sikasso-Bougouni-Bamako	Twice weekly.

SIGNALS

Cables

Grand Bassam is connected by cable to Cotonou and to Monrovia. In 1939 messages to France cost 24.15 francs (2s. 9d.) a word.

Telegraphs

Telegraph wires run along the railway and also alongside the following roads:

Abidjan–Tiassale–Gagnoa–Daloa–Man–Danane

Agboville–Abengourou–Bondoukou

Tiassale–Toumodi–Dimbokro–Daloa

Issia–Sassandra

Bondoukou–Bouaké–Séguéla–Touba–border of French Guinea

Duékoué–Guiglo

Man–Touba–Odienné–Boundiali–Korhogo–nr. Firkessédougou

Korhogo–border of French Sudan

border of French Sudan–Bobo Dioulasso–Dédougou–Ouagadougou–border of Niger

Ouagadougou–Leo

Ouagadougou–Po

Ouagadougou–Yako–border of French Sudan.

Wireless

There are wireless stations at Abidjan, Bobo Dioulasso, Bouaké, Ouagadougou, Sassandra, and Tabou, of which Abidjan is the only one to do any broadcasting. Details are given in Table VII. In 1939 radiotelegrams to France cost 19·90 francs (2s. 3d.) a word.

TABLE VII. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Abidjan . . .	5° 22' N. 3° 58' W.	4 medium 10 short	0·5 0·25	Coast, commercial, and broadcasting stations. Coast service communicates with regular steamers. Interior service. During the evening broadcasting at 0·35 kW. instead of 0·5 kW. Meteorological bulletins.
Abidjan Aéradio .	5° 19' N. 4° 01' W.	1 medium 4 short	0·4 0·25	Aeronautical station.
Bobo Dioulasso	11° 10' N.	2 medium	0·1	Aeronautical station.
Aéradio . . .	4° 18' W.	4 short		
Bouaké Aéradio and	7° 41' N.	3 medium	0·1	Aeronautical and direction-finding station.
Aérogonio . . .	5° 02' W.	3 short		
Ouagadougou	12° 22' N.	2 medium	0·1	Aeronautical station.
Aéradio . . .	1° 32' W.	4 short		
Sassandra . . .	4° 56' N. 6° 08' W.	2 short	0·1	Commercial station. Interior service.
Tabou	4° 28' N. 7° 20' W.	5 short	0·2 0·1 and unknown	Commercial station. Interior service.



85. Road bridge near Bouafle



86. *A river crossing between Dabou and Tiassale*

APPENDIX A

Principal Imports and Exports

		1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
<i>Exports</i>							
Cocoa	tons	42,877	56,633,852	48,980	71,925,133	47,305	149,095,514
Coffee	„	5,102	25,918,465	6,383	32,423,100	9,921	50,397,255
Shelled ground-nuts	„	9,173	11,428,978	19,155	22,673,959	23,702	25,251,901
Mahogany (<i>acajou</i>)	„	25,543	11,356,626	29,830	10,622,745	46,317	19,278,792
Other timber	„	19,755	5,097,540	16,585	4,206,753	34,298	12,991,090
Cattle	head	38,258	5,018,630	30,496	5,098,200	25,991	5,764,200
Cotton	tons	1,532	5,439,504	1,986	7,033,226	2,184	8,662,078
<i>Imports</i>							
Cotton cloths	tons	1,699	25,641,371	1,307	28,607,946	1,310	44,233,388
Sailcloth, tarpaulins, and sackcloth	„	2,058	3,456,389	2,395	6,067,607	2,357	8,351,751
Cotton thread	„	89	1,331,519	131	2,173,449	200	4,593,999
Machines and machinery	..	..	3,852,986	..	4,582,677	..	11,189,441
Iron goods ¹	„	2,314	3,063,842	3,082	3,678,965	6,882	12,383,535
Other metal goods	..	..	11,933,904	..	21,008,040	..	37,599,679
Motor vehicles	Nos.	698	7,997,443	825	10,309,785	825	15,140,859
Oil fuel	tons	8,886	4,251,200	10,894	6,331,025	15,830	13,968,313
Rice	„	1,685	926,483	2,561	1,545,534	7,254	6,617,715
Wine	gallons	381,194	5,043,622	531,598	5,894,034	611,316	8,007,243
Wheat flour	tons	1,581	1,012,700	2,614	1,976,202	1,800	3,458,205
Building materials	„	14,177	2,524,406	21,588	4,365,115	29,194	6,167,920
Tyres	„	191	3,031,472	222	3,808,869	361	8,497,055

¹ Including rails for railway lines.

CHAPTER VI

MAURITANIA

I. GENERAL

Area: 328,190 square miles. Population (1937): 370,764. Density per square mile: 1.13. Capital: St. Louis.

EVERY section of this chapter bears witness to one fact: the power of the Sahara. The surface of the colony is barren, its climate dry, its vegetation scanty, its inhabitants few, its communications bad, and its commerce negligible. The oases and the Senegal alone permit agriculture and, together with a few coastal villages, provide the only settlements. Its one port has a population of less than 1,000; no other town exceeds 3,500 persons; and the political capital is in Senegal. Mauritania is, in short, mainly a desert land, and it has advanced less far along the road of French civilization than any of the other colonies.

It extends from $14^{\circ} 44'$ N. to $27^{\circ} 23'$ N. and from $17^{\circ} 04'$ W. to $6^{\circ} 15'$ W. Its greatest length is 790 miles and its greatest width 650 miles.

Boundaries. The Atlantic Ocean provides most of the colony's western boundary. Cape Blanco marks the point where both Mauritania and Rio de Oro meet the sea, and the international frontier runs roughly northwards and north-eastwards from there to $17^{\circ} 20'$ N., which line of latitude is followed as far as $13^{\circ} 00'$ W. The frontier then turns a little west of north, but gradually curves north and east in an irregular arc as far as $23^{\circ} 27'$ N., $12^{\circ} 00'$ W. This twelfth meridian forms the frontier as far as its junction with the twenty-sixth parallel, and the latter as far east as $8^{\circ} 40'$ W. From here the frontier goes north for 95 miles to $27^{\circ} 23'$ N., $8^{\circ} 40'$ W., the meeting-point of Rio de Oro, Algeria, and Mauritania. The interterritorial boundary between the two latter then bears away south-east for 180 miles to $25^{\circ} 53'$ N., $6^{\circ} 12'$ W., when it encounters French Sudan. After this the intercolonial boundary goes due south for 190 miles and then south-south-west for 276 miles. The next section, some 120 miles long, still maintains the latter direction, but with many minor variations. Three more straight stretches follow: south-west for 129 miles, north-west for 32 miles, and west by north for 10 miles. The boundary then follows the Karakoro downstream to its junction with

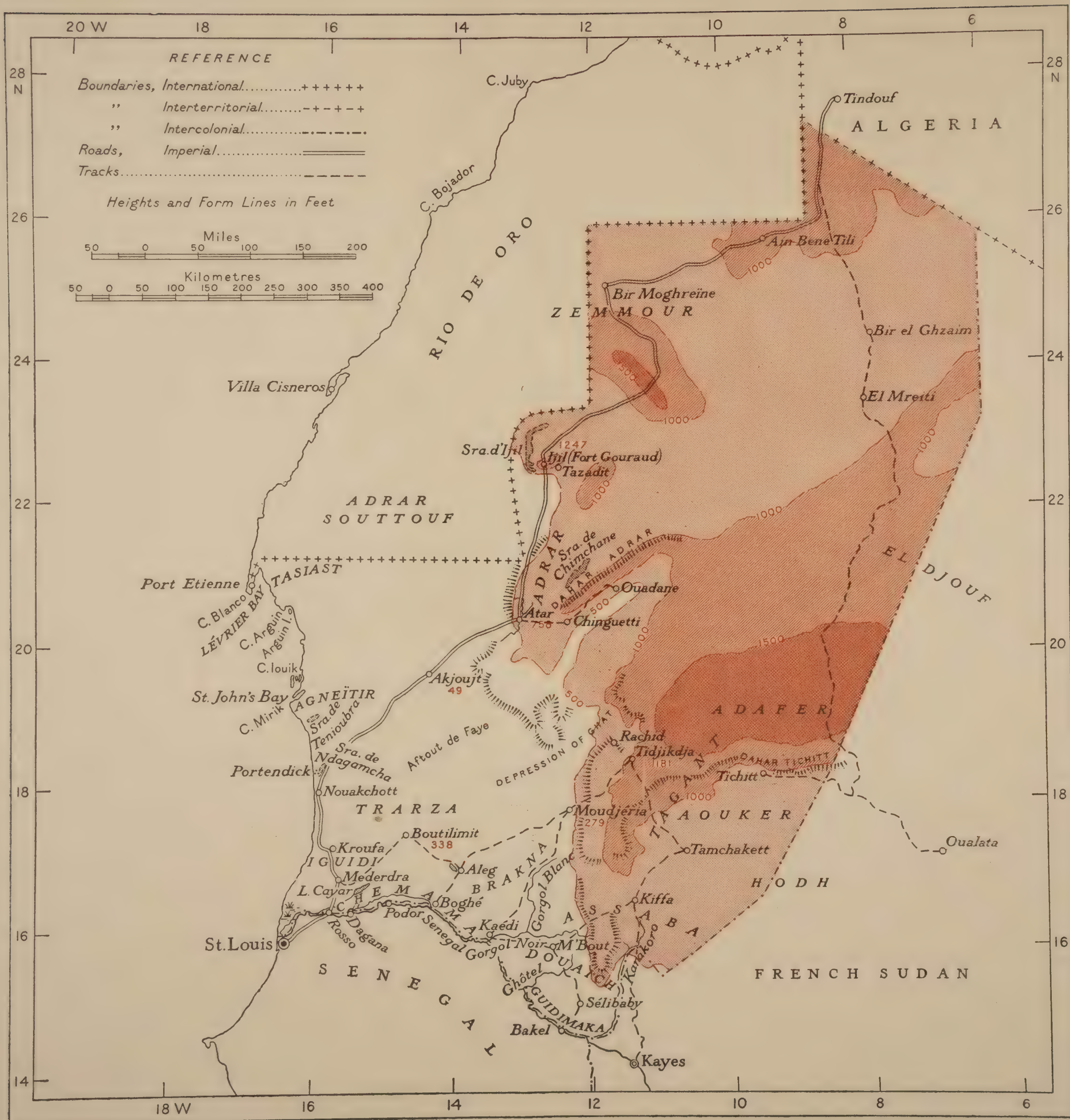


FIG. 36. Mauritania

the Senegal. From this point almost to its mouth the north bank of the Senegal marks the boundary, for the first 16 miles with French Sudan and subsequently with Senegal. This carries it on for 549 miles, i.e. until 2 miles above St. Louis. Here it turns north-westward up a small channel, and then turns south-west and west to reach the Atlantic Ocean again at $16^{\circ} 04' \text{ N.}$, $20^{\circ} 31' \text{ W.}$

It will be clear both from the above description and from the map that the northern and eastern boundaries of this colony are mainly straight lines. This itself affords yet another commentary on the influence of the desert.

2. PHYSICAL DESCRIPTION AND GEOLOGY

The Coastal Plain

IMMEDIATELY behind the coastal dunes is a narrow depression. This runs without a break from St. Louis to latitude 19° , and thence intermittently to Rio de Oro. In its southern half are permanent marshes, but in its northern half they are replaced by strings of salt-encrusted mud-flats (*sebkras*) that are only marshy after rain. The largest of these are the Sebkra de Ndagamcha and the Sebkra de Tenioubrar.

Inland of this depression is the coastal plain. It stretches from the Senegal to the international frontier, has an average width of about 200 miles, and occupies rather more than a quarter of the total area of the colony. The prevailing rocks are friable sandstones, but limestones and gypsiferous marls are also encountered, and thin salt deposits mark the sites of former *sebkras* and lagoons. South of a line running roughly from Mederdra through Aleg to Moudjéria there are flat clay plains. These are dotted with meres, broken by low mesas, and seamed with shallow watercourses. The summer rains cause floods, which are increased and prolonged in the grey, sandy clay of Chemama by the autumn floods of the Senegal. Permanent lakes, such as Lake Cayar, swell to three or four times their normal size, depressions become swamps, and temporary streams fill the ouadis. For a short time the Gorgol Blanc, the Gorgol Noir, the Ghôtel, and the Karakoro can boast the name of river.

The mesas west of M'Bout that run north and south are outliers of the sandstone plateau of the interior. They overlook the grey laterite and argillaceous sandstone of Brakna and Douaich.

North of latitude 17° the lowlands are largely masked by dunes (*sbar*), fixed and scrub-covered in the south, but increasingly mobile

and bare northwards. These sbars are alined from north-east to south-west in ridges that are from 2 to 20 miles wide. Between them are similar clay depressions (*aftouts*), which are floored by lacustrine limestone and clayey sand and which are marshy after the rains. Their surface is often pebbly, and they carry rather more vegetation than might be expected. The widest of these *aftouts* is south-west of Akjoujt: it is some 30 miles wide and reaches to the coastal depression. Another large one, the *Aftout es Saheli*, runs parallel to the coast south of Nouakchott. The plain between Port Etienne and Atar, while showing similar features, is constantly broken by low rocky hillocks. These are particularly abundant in Tasiast and just west of Atar.

The level of the water-table varies greatly from place to place, and generalization is difficult. In the north and in Trarza wells are somewhat infrequent, and they are mostly situated in the valleys, where they may reach depths of 60 feet. Water is also drawn from the base of large sand-dunes, at times from wells as much as 300 feet deep. In the river alluvium of the Senegal and its tributaries fresh water may be obtained from shallow wells, save in the lower reaches of the river, where the water is brackish. In Brakna and Douaich conditions are variable, the deepest wells being about 250 feet.

The Plateau

The remainder of the colony consists of a somewhat featureless plateau. Rough surveys have been made along the main tracks, but large areas are still unexplored and unmapped. The only noteworthy relief is along its scarped western and south-western edge. The rest of the plateau is a rocky waste of Lower Palaeozoic sandstone falling eastwards to French Sudan and rising north-eastwards to Algeria.

The scarp itself averages 200 feet in height. Entering the colony from French Sudan, 60 miles east of Tichitt, it makes a huge curve to Assaba, enclosing the plains of Aouker. These plains are floored by ancient lacustrine muds and loams, by sandstones, by limestones, and by deposits of gypsum, all of them being covered locally by fixed sand-dunes. Tichitt is the biggest of the many oases that lie along the scarp foot and use its springs. Low outliers rise to form broken country east of Kiffa, while to its west a long ridge of sandstone runs south between the Gorgols and the Karakoro. Once continuous from Moudjéria to Sélibaby, it has now been dissected into several broad mesas between which pass east-and-west tracks. The scarp extends

northwards from Moudjéria to Atar, but no longer as a single line. In some places two or three parallel steps can be discerned; in others, as, for example, north-west of Tidjikdja, tongues of lowland protrude into the plateau; and the whole is scored with deep gorges. South of Atar the western limits of the plateau have been eroded into a complex mass of valleys and flat-topped hills. Along the foot of these scarps also there are numerous springs in the gravelly rock debris. The largest of these supplies Ijil and has a daily output of from 8,000 to 16,000 gallons according to season.

Two major scarps converge on Atar itself, one from the north and the other from the north-east. The former carries the Imperial road for 60 miles until the road descends its steep western face. The latter extends nearly 200 miles east-north-east. This is above the trough in which the Sebkra de Chimchane lies and past the curious depression in the south-west of which is Ouadane. After a gap where sand has blanketed the outcrop the line continues north-east into French Sudan. It consists of sandstones and subsidiary shales, and its red cliffs face north-west, overlooking the great expanse of dunes known as Erg Iguidi. This is the only part of the north of the colony to have seasonal pasture. The rest is a barren, waterless plain. In the northernmost tip there are sandstones of Devonian to Lower Carboniferous age, and their beds dip to the north at a low angle and give rise to shallow escarpments running east and west. These strata overlie the great belt of pre-Cambrian schists, gneisses, and granites that compose a vast plain that stretches for 850 miles from the coast of Rio de Oro to the Eglab massif of Algeria. In the north-west of the colony are the granite hills of Zemmour, and east of Ijil there is a very large mesa. Elsewhere reg and erg alternate, ouadis end in depressions of various sizes, and mesas and tors rise haphazard.

3. THE COAST

THE coast (Fig. 37) lies between latitudes $21^{\circ} 10' \text{ N.}$ and $16^{\circ} 05' \text{ N.}$ Its actual length is about 490 miles, and it varies little in direction, running almost due north and south. Indeed, it is never farther west than $17^{\circ} 04' \text{ W.}$ or farther east than $16^{\circ} 01' \text{ W.}$ Being the western edge of the Sahara, it is mainly low and sandy, and seldom rises above 30 feet. The only important features are Cape Blanco and Lévrier bay, Arguin bay and Cape Arguin, and Cape Mirik. Sandbanks make landing difficult, and in many places the sand-dunes are shifting. The Canary current generally sets southwards off the coast, but from

May to November its direction is not always constant. Visibility is sometimes poor because of sand blown by the off-shore winds. Fog and mist render the whole coast dangerous to navigation, there are very few indentations to give shelter to any but the smallest vessels, and shipwrecks are frequent seamarks. Villages are rarely less than 5 miles from the sea.

The coastal dunes (*sbar*) are parallel to the shore. Behind these there are old and fixed dunes with aftouts running between them. In these aftouts old lagoons left by the sea have given birth to salt pans. There are no roads except the Imperial road, but there are numerous camel tracks.

The excellence of the fishing-grounds off the coast is well known. It is due to the continuation of the continental shelf out to sea and to the exceptionally rich plankton found there.

The Cape Blanco Peninsula and Lévrier Bay

The Cape Blanco peninsula, 30 miles long and 8 miles wide at its widest part, is bisected north and south by the boundary between Mauritania and Rio de Oro. The cape itself (Fig. 38) is very steep and attains a height

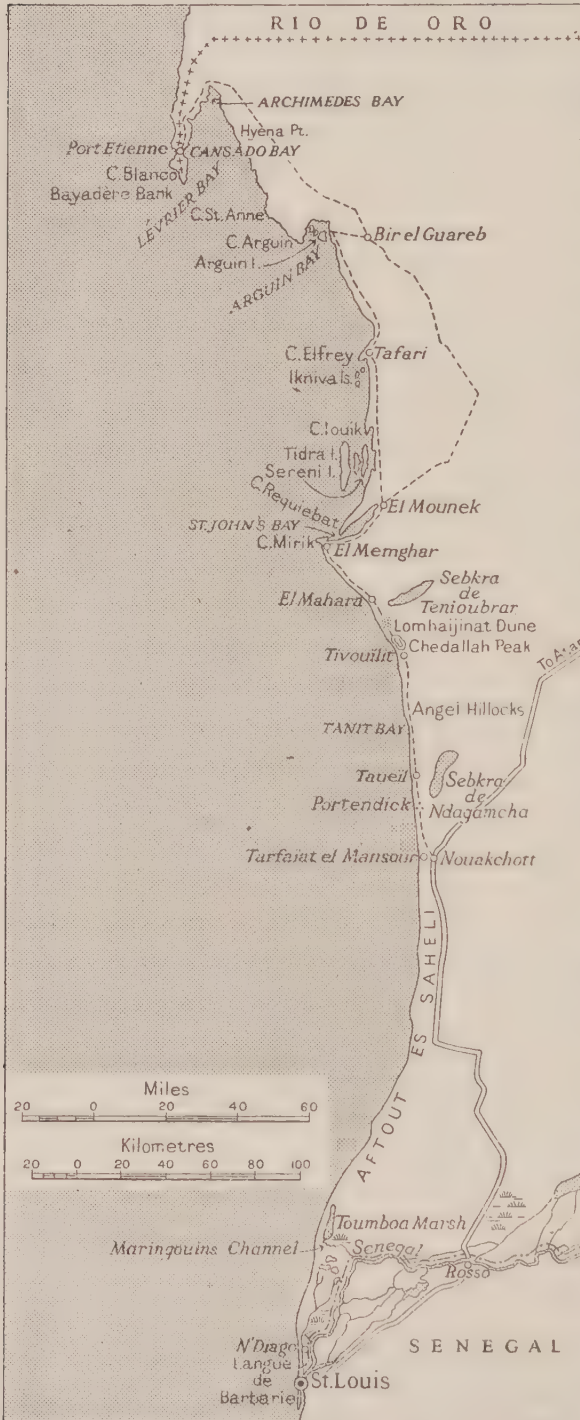


FIG. 37. *Mauritania: The Coast*

of about 80 feet. It is composed of crumbling sandstone and is therefore liable to considerable alteration in shape. On its eastern side is a small cove, enclosed by cliffs. Two and a half miles south is the Bayadère Bank, between which and the mainland navigation is possible in 4 fathoms. Lévrier bay, one of the largest in West

Africa, lies east of the peninsula. It is about 27 miles long and up to 20 miles wide, and it is entered between Cape Blanco and Cape St. Anne. It is a natural harbour, and, although there are many shoals, it provides good anchorage for vessels drawing up to 20 feet. There are several offshoots of the bay, of which Cansado bay, on the east of the peninsula and north of Cansado point, affords the best anchorage, ships of 22 feet draught being able to use the roadstead. From Cape Blanco to Cansado point there are cliffs; but the shores of Cansado bay are sandy with a few rocky points, Rey point marking its northern



FIG. 38. *Cape Blanco*

extremity. A conspicuous wreck, that of the French cruiser *Chasseloup Laubat*, lies midway between Cansado point and Rey point. Port Etienne (p. 338) is on the north-west of Cansado bay. Its main connexion with the interior is a track leading to the Imperial road at Atar. This track has several branches into Rio de Oro.

From Rey point northwards for 6 miles to Star point the coast consists of cliffs with a few sandy beaches and with less than a fathom of water for half a mile off shore. Half-way between these points is the rocky headland of Moor point. Star bay, north-west of Star point, is only accessible to ships' boats. For some 6 miles north of Star bay the coast is fringed by sand off a rocky shore. This extends as far as Archimedes bay, the head of Lévrier bay. From here a track branches off from the one going inland to lead south, roughly parallel to the coast. The eastern shore of Lévrier bay has several sandy beaches, behind which are shifting dunes. The only prominent landmark, Hyena point, just north of latitude 21° , is 39 feet high, and upon it is a stone tower.

Cape St. Anne to Cape Mirik

The coast runs south-south-east past Cape St. Anne to Cape Arguin, which is 37 miles south-east of Cape Blanco. It is very low and has a submerged sandbank protruding beyond it. Soundings in this region vary considerably and abruptly. In Arguin bay, east of the cape, are three small uninhabited islands, of which the largest, Arguin island, has on it the ruins of an old fort and of a fish factory. Central Bank obstructs the entrance to the bay, making the anchorages

within difficult of access. These are south and east of Arguin island, respectively in 5 and in $3\frac{3}{4}$ fathoms. There are various tracks in the neighbourhood, and the village of Bir el Guareb is a local route centre. The track from Port Etienne continues south-east, gradually increasing its distance from the coast. A second track leads west from Bir el Guareb and reaches the coast opposite Arguin island. Turning south, it runs parallel to the shore and rejoins the other at El Mounek (Lemaounek).

From Cape Arguin the coast curves slightly south-east and then south-west to the cliffs of Tafari and the promontory of Cape Elfrey. Four miles south of Cape Elfrey, and the same distance off shore, are the three small Ikniva islands, which have steep seaward faces. Cape Iouik is 23 miles along the coast from Cape Elfrey. This is only 3 miles north of Sereni, the innermost of a group of three long narrow islands. The largest of these, Tidra, is 18 miles long and 3 miles broad, and Sereni is joined to the mainland at low water. South-east of these islands the coast trends south-west to Cape Requiebat (Erguiebat). The last 15 miles form the north-west shore of the Thila peninsula, south-east of which is the long and narrow St. John's bay. This bay affords shelter to small craft, and at the head of it stands the village of El Mounek, mentioned above. The track continues south-west and then south to keep in close company with the coast as far as Nouakchott.

Cape Mirik to Nouakchott

Cape Mirik (Timiris) is a sandy promontory 23 feet high. Two miles south-east is El Memghar, one of the few villages which is actually on the coast. From here the shore curves south-east for nearly 40 miles to Tivouïlit (Tioulit), another local route centre. The dunes gradually rise to a height of 100 feet, but then fall away rapidly. The most obvious landmarks are two red cliffs, 80 feet high, at El Mahara, 21 miles from El Memghar; the Lomhaijimat dune, 50 feet high and 8 miles farther on, which stands out by reason of its dark rocky peak in the middle; and the Chedallah peak, 100 feet high and the highest point on the whole coast. After this there is a very low stretch, where the Sebkra de Tenioubrar almost reaches the sea. Angel hillocks, 80 feet high and 16 miles south of Tivouïlit, are distinguishable by their whiteness and by a tomb on their summit. They mark the northern end of the so-called Tanit bay, but in actual fact the coast is almost straight. Thirteen miles south of them there is a wreck on the beach and a sandbank outside it. Three-quarters of a

mile south-east of this is a yellow dune, south of which a landing can be effected in good weather. Nearby is the fishing village of Taucil, 6 miles inland of which is the Sebkra de Ndagamcha. Eight miles south of Taucil is the site of the former settlement of Portendick. Near the shore there is an anchorage between two shoals, and farther on another and safer one, which avoids the strong tidal races that raise breakers closer inshore.

Fifteen miles south of Portendick is Tarfaïat el Mansour, off which there is anchorage up to 9 fathoms. Ashore there is a metal pylon, 19 feet high, used for an aircraft beacon. Due east of this, $4\frac{1}{2}$ miles inland and east of red sand-dunes that run north and south, is the former military post of Nouakchott on the Imperial road. This road, having come from Akjoujt (179 miles), runs within 7 miles of the coast for its next 56 miles. At Nouakchott there is a wireless station, a meteorological station, and a landing-ground.

Nouakchott to the Border of Senegal

The Aftout es Saheli stretches for 100 miles south of Nouakchott, and the coast itself is composed of low white sandhills, dotted with clumps of dark vegetation. Then it is broken by the Maringouins channel (*marigot*), a former outlet of the Senegal river. On the beach near the mouth of this channel is a wreck, which shows up like a black rock. North of it is the Toumboa marsh, some 10 miles long and lying north and south about 2 miles from the shore. South of the Maringouins channel the Senegal is separated from the sea by marshy ground which is often split up into islands. The coastal belt finally dwindles to the long, narrow strip of land called the Langue de Barbarie. The village of N'Diogo, with a few houses and palm-trees, stands on the northern end of this spit of land and is 6 miles north and 2 miles west of the intercolonial boundary with Senegal.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	Latitude N.	Longitude W.	Altitude in feet
Ain bene Tili	25° 46'	9° 20'	c. 1,800
Ijil (Fort Gouraud)	22° 41'	12° 43'	1,247
Port Etienne	20° 56'	17° 03'	13
Atar	20° 33'	13° 08'	758
Akjoujt	19° 45'	14° 22'	49
Tidjikdja	18° 30'	11° 31'	1,181
Tichitt	18° 20'	9° 30'	c. 900
Nouakchott	18° 07'	15° 58'	66

	Latitude N.	Longitude W.	Altitude in feet
Moudjéria	17° 53'	12° 20'	279
Boutilimit	17° 32'	14° 41'	338
Kiffa	16° 38'	11° 24'	c. 500
Kaédi	16° 15'	13° 32'	96
Sélibaby	15° 14'	12° 12'	c. 300

THE climate has two outstanding features: the north-easterly winds and the contrast between day and night temperatures. Dry air and lack of cloud cause the latter, and the winds themselves are also dry. Rain, therefore, is everywhere deficient and unreliable.

Meteorological figures are available only for a few stations and for a few years, but statistics for St. Louis (Senegal) and Kayes (French Sudan) help to complete the picture for the south of the colony.

Pressure (Fig. 58)

Throughout the year pressure decreases from north to south. In January the northern tropical high-pressure area extends over Rio de Oro and the north of Mauritania. With the apparent northward declination of the sun in the early part of the year, the high-pressure area moves north and retreats westwards over the Atlantic, but the equatorial low-pressure belt that has moved north over West Africa only just reaches the south of the colony. In July the mean pressure has fallen by 5 or 6 mb. in the north, but there is no corresponding change in the south, where annual variations are 3 mb. at most.

TABLE I. *Mean Daily Pressure (1000+millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Port Etienne	17	16	15	14	13	14	13	11	13	14	15	17	14	6
Atar	17	15	14	11	11	12	10	10	11	13	15	17	13	7
Nouakchott	14	14	12	11	11	12	12	11	11	12	13	15	12	4

It is very rare to have a diurnal change of more than 3 mb. The highest pressures are at about 10.00 a.m. and 10.00 p.m. and the lowest at 4.00 a.m. and 4.00 p.m. Small irregularities, such as those that occur farther south with tornadoes, are uncommon.

Winds (Fig. 50)

Surface Winds. Over most of West Africa there is a simple alternation between the monsoon and the north-easterly winds. Along the west coast, however, it is necessary to distinguish between two separate currents (Vol. I, pp. 59 and 61) composing the latter. It is

now common practice in West African meteorology to use the term 'harmattan' for those hot, dry, dusty winds which blow from the Sahara, and to reserve the term 'trades' for the rather moister current experienced along the west coast. Its ultimate origin is that part of the northern tropical high-pressure belt which lies over the north Atlantic, and it is this that accounts for its greater humidity. Although the trades enter Mauritania from Rio de Oro, most of their passage has been over the sea.

The two main wind currents are, therefore, the trades along the coast and the harmattan farther inland. Both currents are shallow and light. Both have average speeds of between 5 and 10 m.p.h., with a general increase from May to September and greater speeds in the afternoons than in the mornings. The annual means at Port Etienne are above the average: they are from 13 to 19 m.p.h., with 27 m.p.h. for the evenings in June.

The monsoon is not important. It touches the extreme south of the colony for a mere month or two between July and September.

To these general rules there are some exceptions. The harmattan sometimes reaches the coast and intervenes in the trades during December and January. Tornadoes are occasionally experienced in the south of the country between July and October, although they rarely give rain. Very violent sand storms occur from time to time in the interior. Sea-breezes frequently divert the trades, so that the afternoon readings at coastal stations often show a decided increase in westerly and north-westerly winds.

Upper Winds. Above these surface currents lie easterly winds and, higher still, light westerlies. These last extend to very great heights. This vertical structure is constant all the year, but the levels at which the different currents are found varies from latitude to latitude, from season to season, and even from day to day.

Fig. 50 shows typical sections over the coast at two seasons. Although the trades are certainly deeper farther west over the Atlantic, there is no reason to suspect that vertical sections inland would show any great differences, except that the harmattan takes the place of the trades as the surface wind.

The easterlies are dry and hazy. They are wedge-shaped in vertical section, being deeper to the south. Over any latitude their depth, therefore, decreases from August to February and increases from March to July. Neither they nor the westerlies above them have a velocity which normally exceeds 20 m.p.h., but high speeds have been recorded above 30,000 feet.

Rainfall, Cloud, and Thunder

Rainfall. Rainfall is everywhere scanty and very variable. Only the north-west and the south receive small and seasonal falls; but even there the totals are very irregular. The former lies at the southern limits of the west winds of temperate latitudes which move south to give north-west Africa its winter rain, and the latter at the northern limits of the monsoon.

At Port Etienne most rain falls in September and October. The rainfall of central Mauritania comes from one or two fortuitous storms, which cause temporary floods in the aftouts, and which replenish the many wells in the sandstone plateaux. Even in the south of the colony the wet season is very short and the year's total comes from a few heavy showers, which usually occur in the afternoon. It is, however, sufficient to fill such rivers as the Gorgols and the Karakoro for a few weeks, and causes widespread floods on the clay flats of Brakna and Douaich.

Cloud. The sky is usually clear, from 2 to 4 tenths of it normally being covered. Southwards and coastwards there is more cloud, and, as a rule, the second half of the year is cloudier than the first.

Strato-cumulus is common in the trades in the early morning and is responsible for the higher readings at 8.00 a.m. at coastal stations. It soon breaks up, however, into small cumulus clouds. These usually lie at about 2,000 feet and decrease towards the evening. Inland the evenings are slightly cloudier, but nights are brilliantly clear.

Thunder. In the north thunderstorms are rare. On the coast they are slightly more common, but inland there may be as many as 4 or 5 a month in July and August. It is exceptional to have more than 12 a year.

In the south storms are more common. They may total 40 or 50 a year, all between June and October. They are invariably short-lived and their frequency decreases rapidly northwards. Storms at night usually approach from an easterly direction and are accompanied by violent winds.

Temperature and Humidity

Temperature. The diurnal variations are more striking than the annual. Night temperatures of 50° contrast sharply with day readings of 100°, and in more exposed places the range outside the screen may be 20° greater.

TABLE II. Mean Rainfall

R = Rainfall in inches. X = Maximum fall in 24 hours. D = Number of rain-days.

Station	Yrs. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Port Etienne	10	R 0.13 X 0.65 D 0.3	0.02 0.18 0.3	0.04 0.20 0.3	.. 0.04 0.2	0.02 0.08 0.4	0.01 0.71 0.2	.. 0.04 0.1	.. 0.05 0.1	0.34 0.99 1.4	0.46 3.27 1.4	0.06 0.41 0.3	0.37 2.64 0.7	1.45 3.27 5.7
Atar	10	R 0.05 X 0.32 D 0.4	0 0 0	0.04 0.15 0.5	0.02 0.22 0.2	0.04 0.21 0.5	0.08 0.54 0.7	0.32 1.38 1.4	1.20 1.10 5.4	1.06 1.85 3.5	0.13 0.63 0.8	0.05 0.13 0.6	0.04 0.27 0.6	3.03 1.85 14.6
Akjoujt	9-10	R 0.04 X 0.37 D 0.1	.. 0.01 0.1	0.05 0.22 0.7	0 0 0	0.03 0.10 0.4	0.03 0.24 0.2	0.17 0.51 1.0	2.19 3.31 4.1	0.97 2.56 2.3	0.11 0.77 0.5	0.21 0.10 0.8	0.07 0.12 0.7	3.87 3.31 10.9
Tichitt	9-10	R 0.06 X 0.31 D 0.2	0.09 0.43 0.3	0 0 0	0 0 0	0.10 0.42 0.3	0.24 1.35 0.8	0.45 1.00 1.2	1.61 2.54 3.8	0.86 2.19 2.0	0.35 1.22 0.9	0.10 0.88 0.1	0.01 0.04 0.3	3.87 2.54 9.9
Nouakchott	9	R 0.02 X 0.08 D 0.2	0.09 0.71 0.3	0.06 0.55 0.2	0.04 0.39 0.1	0.06 0.51 0.2	0.06 0.32 0.5	0.48 0.93 1.8	4.10 9.84 4.9	0.93 0.67 3.9	0.39 1.50 1.0	0.13 0.80 0.3	0.06 0.32 0.4	6.42 9.84 13.8
Moudjéria	7-10	R .. X 0.09 D 0.1	0.06 0.60 0.1	.. 0.04 0.1	0 0 0	0.25 1.34 0.4	0.76 1.26 1.4	1.48 3.03 1.8	3.15 2.38 5.6	2.98 3.67 4.4	0.19 0.37 1.0	0.23 1.36 0.4	0 0 0	9.10 3.67 15.3
Kaédi	10	R 0.01 X 0.07 D 0.1	0.01 0.06 0.2	0.03 0.18 0.2	0.02 0.16 0.1	0.26 0.77 0.9	1.19 3.64 3.1	4.71 4.13 6.7	7.36 4.80 10.5	3.06 2.09 6.6	0.82 3.01 1.2	0.09 0.59 0.5	0.01 0.15 0.1	17.57 4.80 30.2
Sélibaby	9-10	R 0.05 X 0.45 D 0.1	0 0 0	0.01 0.12 0.1	0.09 0.63 0.3	0.60 3.70 1.1	3.00 2.84 6.7	6.27 2.60 9.0	8.01 7.23 11.1	5.87 2.41 8.2	1.47 1.50 3.1	0.16 0.55 0.4	0 0 0	25.53 7.23 40.1

Throughout the year very high figures are recorded, especially in the south and in the interior. December and January are the coolest months and May, June, or July the hottest. In the south the rain is sufficiently heavy to reduce the temperature in July and August. On the coast the Canary current performs a similar function. Port Etienne is cooler than Atar and Nouakchott than Moudjéria.

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Port Etienne . . .	79 54	82 55	81 57	81 58	83 59	86 61	81 64	85 68	91 69	87 65	84 62	78 58	83 61	12 15
Atar	87 54	91 55	93 62	102 67	104 71	108 80	110 77	108 79	107 79	101 74	92 63	85 56	99 68	25 26
Nouakchott . . .	85 57	87 59	89 63	90 64	93 69	92 73	89 75	90 75	93 75	91 71	89 65	83 56	89 67	10 19
Moudjéria . . .	89 63	96 65	103 69	108 73	113 81	112 81	107 76	102 75	106 77	108 75	100 70	91 65	103 73	24 18
Kaédi	83 61	92 67	92 71	102 79	104 80	102 80	96 77	90 76	93 77	95 77	91 72	86 65	94 74	21 19

Note. The figures for Moudjéria and for Kaédi are not so reliable as those for the other stations.

Freezing-point lies at about 10,000 feet, but serious icing only occurs even then in cumulo-nimbus clouds, that is to say only during the wet season of the south.

Humidity. The air is very dry, especially when and where the harmattan is dominant, and in the mornings relative humidity is as low as 30 per cent. In the afternoons 15 per cent. is normal in certain months in the interior, and the annual means are respectively about 40 per cent. and 20 per cent. The coast is not so dry. For example, the mean relative humidity at Port Etienne is as high as 78 per cent. in the morning, and only drops to 50 per cent. at midday and 66 per cent. in the evening. The lowest monthly means are in January, when the readings are respectively 69, 38, and 56 per cent.

Visibility

Visibility generally is moderate or good, particularly at night. At Atar the annual mean is $18\frac{1}{2}$ miles, dropping to its lowest, 10 miles, in July. Elsewhere figures range between 8 and 12 miles and are higher in the evenings than in the mornings. On the coast morning mist is common over the Canary current, but it is usually short-lived. In the south there is a general improvement between July and September.

The easterlies carry much dust, so that haze may extend to great heights over the interior and along the coast may be found above the clear surface layers of the trades.

Whenever the wind freshens over any extensive area of dunes, sand storms must be expected. Such storms, though severe, are of short duration, but the residual dust-haze may persist for days. Only the extreme south suffers from the smoke of bush fires at the end of the dry season.

Swell and Surf

Heavy seas are rare, and on most days there is a light or moderate swell from a northerly direction. From July to September, however, along the south of the coast it is occasionally from the south-west. The Senegal table in Appendix II is typical of conditions along this coast if the percentage of northerly readings is assumed to be higher and those from the south-west correspondingly lower.

Surf is everywhere and at all seasons heavy, especially in the afternoons.

Meteorological Services

The only station of long standing in the colony is that at Port Etienne, which is adequately equipped with modern apparatus.

Records of varying reliability and scope, taken over the last few years, are provided by various stations, many of them established in connexion with trans-Saharan motor and air routes. These are at Cape Juby (Rio de Oro), Tindouf (Algeria), Chegga (French Sudan), Ain bene Tili, Ijil, Atar, Akjoujt, Nouakchott, Tidjikdja, Moudjéria, Boutilimit, and Kiffa. All but the first four of these transmit their weather information for inclusion in the synoptic broadcasts from Dakar. Rainfall is recorded at eight other places.

5. VEGETATION

THE vegetation of the west of the colony has been studied in some detail, but that of the parts bordering on Algeria and on French Sudan is almost unknown. Three major zones of vegetation occur in the colony: central Saharan, south Saharan, and thornland. In addition, the narrow coastal belt has a somewhat modified type, and it is termed the sub-Canarian area. The central Saharan zone occupies the north as far south as about $21^{\circ} 00' N.$, and the south Saharan zone merges into thornland about $18^{\circ} 30' N.$ The general charac-

teristics of these zones have been described in Volume I, pp. 102-108, and only the regional distribution and peculiarities are considered here.

The South

The inland margins of the sbar are often well wooded with balsam spurge (*Euphorbia balsamifera*), species of *Acacia*, African myrrh (*Commiphora africana*), the soapberry tree (*Balanites aegyptiaca*), the African nettle-tree (*Celtis integrifolia*), baobabs, and some palms. On the coastal belt proper, i.e. in the sub-Canarian area, larger bushes of tamarisk crown and protect the ridges, while the swallow-wort (*Calotropis procera*) is frequent and dwarf acacias are not uncommon. In the central parts, where the relief is much broken, the usual vegetation is a steppe of high dense grasses, although there are also scattered brushwoods of balsam spurge and of the hard-wooded and often spiny shrub *Gymnosporia senegalensis*. Towards the north the nitre bush (*Nitraria retusa*), a spiny shrub sometimes eaten by camels, becomes an increasingly important constituent. Much of the ground between the shrubs is bare, but low grasses and other herbs sometimes form spaced tufts. In damp hollows rushes, sedges, and grasses form more closed communities.

The delta of the Senegal is abundantly irrigated by the distributaries of that river. Most of this area, indeed, is composed of grasslands which are subject to periodical inundations. The Aftout es Saheli has a steppe vegetation of grasses (*Sporobolus spicatus*, *Aeluropus lagopoides*, &c.), chenopods (species of *Arthrocnemum*, *Salsola*, and *Suaeda*), and two shrubs, the nitre bush and the cottager's tea plant (*Lycium intricatum*). Where the soil is saline the vegetation is highly specialized and dominated by chenopods. Where a layer of sand overlies the clay the balsam spurge forms small clumps.

In the south the hinterland has an enclave or extension of the Sudan subzone of the grass-woodland. Near the Senegal is a brushwood with tamarisks, acacias, and masses of doum palms (*Hyphaene thebaica*) and Borassus palms (*Borassus aethiopum*). In the periodically inundated grasslands are scattered bushes of *Bauhinia reticulata* and *Mitragyna inermis*. A little distance from the river scattered brushwood is associated with quite large trees. Farther north the land is covered with old dunes stabilized by forest of acacias and other trees, by brushwood thickets, and by grassland of tall perennial *Andropogoneae* and by tufts of *Aristida sieberiana* and *Panicum turgidum*. Annual grasses are also common, and mention should be made of the



87. *The intercolonial road north of Danane*



88. *Road bridge across the Nzi near Dabou*



89. *The Senegal at Bakel*



90. *The coast south of Port Etienne*

cram-cram (*Cenchrus biflorus*), which, because of its barbed bristly fruits, is a great pest to men and to animals.

The Centre

The south Saharan zone is, of course, one of gradual transition from thornland to desert. Near the coast there are sandstone outcrops forming low hills, but in places, e.g. in Agneïtir, continental dunes reach the ocean. These sandy hills and old dunes are often dominated by brushwood of balsam spurge, with the cottager's tea plant and occasional acacias in the depressions. A shrubby or subshrubby vegetation is formed especially by chenopods, of which one, *Nucularia perrini*, is abundant everywhere on the plateaux. Where the substratum becomes saline other chenopods (species of *Suaeda*, *Salsola*, *Arthrocnemum*, &c.) are abundant. In certain places large tufted grasses, especially *Panicum turgidum*, are common, and farther north annuals become increasingly important. This annual vegetation appears mainly after the rains and is closely linked to the desert 'acheb'.

Inland of the coastal district, the dunes, the aftouts, and the small hills each have their own vegetation types. The dunes may be stabilized or mobile, and the degree of mobility may vary considerably. Many are constantly being remodelled by the wind and carry a poor perennial vegetation of low woody plants and herbs. The Saharan grass *Aristida pungens* becomes an increasingly important constituent, and other plants of the 'wooded steppe' are *Acacia rad-diana*, *Calligonum comosum* (an almost leafless shrub with jointed branches), and the chenopod *Cornulaca monocantha*. After rains the soil between the shrubs and the grass tufts, which in dry periods is bare of vegetation, becomes covered with transient herbs. Where rock outcrops are fairly frequent and also on the clay of the aftouts there is a savanna vegetation dominated by *Acacia seyal* associated with large tufted grasses (species of *Aristida*, *Adropogon*, &c.). On stony ground (*reg*), largely old river deposits, a sort of steppe vegetation is developed. This is chiefly composed of the tufted chenopod *Nucularia perrini*, which is sometimes mixed with other chenopods (*Salsola* and species of *Traganum*), and of grasses (especially *Panicum turgidum*). A part of the surface of this *reg* remains bare for most of the year, but after rains it becomes carpeted with quickly flowering annuals. In the ouadis there is often brushwood of a caper (*Capparis decidua*) and of *Boscia senegalensis*, a plant much used in native medicine. Tufts of the legume *Psoralea plicata* are also common. On the

small hills conditions are rather more favourable for plant life than elsewhere, and on them occur species exceptional for the district, such as *Combretum aculeatum*, the soapberry tree, and the balsam spurge.

The North

Botanically speaking, the north of the colony has been very little investigated. So far as reliable information can be obtained, the desert proper begins at least at 21° N. At this latitude typical desert soils occur, and the sparse vegetation is either limited to ouadis or is an open type of desert savanna or, more often, of desert steppe. On the extensive dune systems, and especially in the hollows between the dunes, are found *Acacia raddiana*, the most widespread and typical of the desert acacias, the grass *Aristida pungens*, and *Calligonum comosum*. In the ouadis, where the water-table is at or near the surface, a richer flora and a denser vegetation occur with acacias, the soapberry tree, a caper (*Capparis decidua*), and an asclepiad (*Leptadenia pyrotechnica*). Towards the north Mediterranean species become more and more prevalent and include both woody and herbaceous plants. Perennial vegetation is sparser, and it is not only more open in spacing but also more patchy in occurrence. Saline areas frequently have a denser vegetation of halophytes (plants adapted to high salt concentrations in the soil), principally of chenopods, which give good grazing. The 'had' (*Cornulaca monacantha*) is a recognized camel food of the desert, and another member of the same family, *Nucularia perrini*, is dominant over large areas of open steppe. The ephemeral acheb also provides forage after rains.

The granitic hills of Zemmour, while not high enough to have a special climatic flora, have in parts a richer vegetation than the surrounding plains. Acacias and other trees and shrubs are accompanied by a relatively rich shrubby and herbaceous community that includes a number of grasses. The chenopod *Haloxylon tamariscifolium* is one of the commonest plants of this region, and its small bushes play a dominant role in pasturage.

6. THE PEOPLE

ARABS

THE Arabs of French West Africa live mainly in the Adrar, the Tagant, and the Hodh regions of Mauritania and French Sudan. In the course of centuries many of them have acquired a considerable

infusion of Berber and Fulani blood, and a single group of Arabs may show men with skins varying in colour from ivory almost to black. Nevertheless, most of them still have the spare and supple figure, the narrow nose, the small mouth, the wavy black hair, and the haughty bearing of their Arabian cousins. Their physical characteristics have been described in more detail in Volume I, p. 211.

In character they are proud and reserved, not caring for much contact with the outside world. They are boastful, quarrelsome, and



FIG. 39. *Arab Tents*

not readily submissive to authority. It is said that, before the coming of the French, few of the chiefs could ever hope to reach old age or to die peacefully in bed. In spite of this, Arabs are attached to their kinsfolk, and the murder of one of their number or the theft of his property will bring all his fellows together to find and punish the criminal.

Social Organization. There are three main groups of Mauritanian Arabs: the Ouled Delim, the Reguiebat, and the Ouled Bou Sba; but the component tribes of each group have a very high degree of independence. Within each tribe there may be found up to four classes or castes. The first of these is that of the *hassane* (warriors), descended from the original leaders of the Arab invasion; these men form a nobility, who live on the rents of their tributaries and on the work of their dependents. The second class is that of the *mallams*, who are priests, commentators on the Koran, teachers, doctors, and even traders. The third class is that of the *zenaga*, who are far less pure-blooded than the *hassane* and are tributary to them. Some *zenaga* are artisans. The fourth class is that of the *harratine*; these are slaves, freed slaves, and their descendants. Among them are the *pourogues*, half-bred Arabs and Soninké, who are regarded as the lowest class of all.

Polygamy is rare; but, even so, the position of women is low, most Arabs being inclined to keep their women in the seclusion imposed by the strictest interpretation of the Koran. The women are not without good looks, but, to Arab eyes, the fairest beauty lies in fatness; so that young girls of marriageable age are systematically fattened in order to secure the most eligible husbands.

These Arabs are Moslems, but they are usually neither intolerant nor fanatical.

Mode of Life. In the main the Arabs are nomadic pastoralists, though a few of the harratine are settled in villages and grow millet and other crops. Camels are the most valuable beasts, being used for riding and for burden, but sheep and goats are also kept. The herdsmen are zenaga. The few horses are all the property of the hassane. Pasture is often scarce, and the flocks and herds are moved from place to place in the well-known manner. In many cases a regular route is followed, and a year or more may elapse before a return is made to the starting-point.

Huts are rare, the majority of the dwellings being tents (Fig. 39). These are pitched close together in a little group, and the simple furniture and utensils are designed to be transported without breakage. Travellers, whether Arab or European, are hospitably received as a rule, and the evenings are spent round a fire, the men telling long tales and drinking tea. The latter is said to have been introduced in the past by British traders. It is drunk very strong and sweet, and is served in ceremonial fashion in small tumblers made of very thick glass. Customs figures show that, in normal years, the Arabs import 18 tons of tea and nearly 200 tons of sugar.

The bulk of their food is obtained from the milk of their animals, and is supplemented by barter, gathering, and a little agriculture. Clothing, rugs, and mats are made from animal hair, wool, or skins.

7. HISTORY

Native History to 1800

THE ancient history of the country now called Mauritania is more than usually obscure. One point on its coast is the legendary site of a Carthaginian colony of 30,000 inhabitants, said to have been founded by Hanno. It is certain that the Roman province of Mauretania Tingitana never extended south of the Draa. In the early centuries of the Christian era the Berbers occupied the northern parts

of the present colony, including the modern Rio de Oro, while in the south the population was predominantly negro.

In the tenth and eleventh centuries the eastern part of the country was subject to the empire of Ghana, some description of which has been given in Volume I. The western boundary of this empire was a line running north and south through Chinguetti. It was a pagan empire, and its destruction was eagerly sought by the Marabouts. These were members of a fanatical Moslem sect, which originated on an island in the lower Senegal, and which spread its doctrines as far afield as southern Spain. Abu Bekr ben Omar, a Marabout and chief of the Lentoumas of Tagant and Adrar, led his men northwards and made himself master of all southern Morocco. He was then forced to surrender the command of his northern army to his nephew, Yusuf ben Tashfin. This great man proceeded on his career of conquest, and carried the Almoravid Empire to the banks of the Ebro. Abu Bekr himself turned south, and sacked Ghana in 1076, killing those of its inhabitants who would not turn Moslem. Thereafter, although the empire of Ghana lingered on until the middle of the thirteenth century, its western lands were never recovered. Abu Bekr was killed in 1087 during a revolt of his own people, and his successors reverted to the position of chiefs of the Lentoumas. They were hard put to it to defend their own territory, notably against the Beni Hassan and other tribes from the north. At one stage this pressure was so great that numbers of Lentoumas migrated eastwards into the Sudan. In the following centuries they were pushed farther south by the Beni Hassan and by the Arabs of Tasiast and of Adrar Souttouf. On the death of their chief, Maghfar, in the middle of the sixteenth century, the Beni Hassan split into two under his sons Barkhani and Terrouz. From these two descend the emirates of Brakna and Trarza. During the next century the twin tribes made themselves masters of the country as far south as the right bank of the Senegal up to its junction with the Gorgol Blanc, and the Ouolofs living there were either enslaved or driven across the river. For many years the emirate of Brakna extended as far up as Bakel, but about 1790 Douaich obtained its independence, forming a third Arab state.

European Contacts before 1814

The first part of the coast to be rediscovered by Europeans was Arguin bay. In 1443 the Portuguese explorer Nuno Tristam landed there and bought slaves, and in 1461 other Portuguese built a fort on Arguin island to protect their trade. Traces of this fort still exist. It

was captured by the Dutch in 1638, by the English in 1665, and again by the Dutch in 1666. The Dutch signed a treaty with the Arabs, which laid the foundation of the export of gum from Mauritania, and at Arguin they willingly paid high prices in the hope, temporarily realized, of killing the French gum trade from St. Louis. In 1678 the French again captured Arguin island, to which their title was recognized by the Treaty of Nimeguen the same year. In 1717 André Brue, the French Governor of Senegal, obtained from the Trarza Arabs the right to erect a fort at Portendick. He also secured exclusive rights of trading on the coast between that place and Arguin, where the Dutch had again established a post. This treaty was the origin of the *coutumes* or customary payments to chiefs, which were to cause the French great difficulties before their abolition by Faidherbe in the middle of the nineteenth century. Meanwhile Arguin island had changed hands several times, and at one period French, English, and Dutch had trading settlements there simultaneously. By the Hague Convention of 1727, however, Holland abandoned in favour of France all rights to the island and to Portendick, and finally withdrew from this part of the coast.

The contest for Arguin and Portendick was renewed at the outbreak of the Seven Years War in 1756, and, with the uneasy interludes given by the Treaties of Paris in 1763 and of Versailles in 1783, continued till 1814: but in this contest the chief adversary of France was Great Britain. At each interlude most of France's possessions on the west coast of Africa were restored to her, and in each war they fell into the hands of the English again. By 1814, therefore, all the French possessions in West Africa were under British control.

The Nineteenth Century

By the Peace of Paris of that year France received back her West African settlements as they had existed on 1 January 1792. As far as Mauritania was concerned, this only amounted to Arguin island and Portendick with a vague suzerainty along the coast between Cape Blanco and St. Louis. Moreover the British, though not allowed to have permanent establishments, were permitted to engage in the gum trade between Portendick and Arguin bay. This right had been reserved to them in 1783, and lasted until 1857, when it was abandoned in exchange for the cession of the French post of Albreda in the Gambia.

Although Arguin and Portendick were handed back to France in

1814, no immediate attempt to reoccupy either of them was made, and during most of the nineteenth century French interest in Mauritania was confined to ensuring the security of the gum trade of Senegal. The fact that no other European Power seemed to desire the country made it unnecessary for France to do more than to restrain the local tribesmen.

The Gum Trade. With this object treaties were made in 1821 with the Arabs of Trarza, Brakna, and Douaich, by which these tribes renounced all claims to suzerainty on the left bank of the Senegal. In return, the chiefs were promised a subsidy so long as they protected French trade on the river. In spite of these agreements, the depredations of the Trarza Arabs and their incursions into French territory on the left bank did not cease. Armed force was necessary to repel them, and Portendick was blockaded by the French in 1834. The British Government remonstrated, stating this step to be an infringement of their rights under the Treaty of Paris. The blockade was raised, and ultimately the British traders received compensation. After a series of defeats a fresh treaty with the Trarza Arabs was entered into in 1835, by which they again abandoned all claims to suzerainty on the left bank of the Senegal, and engaged again to bring gum to the river.

Except for the British rights on the coast, the trade in gum was confined to French subjects, and in 1842 it was controlled by further treaties with the Arabs. Under these, regular payments (*coutumes*) were made to the chiefs, and the trade which was carried on by the river was confined to three fixed points (*escales*). The gum was collected in the desert by the Arabs, carried by them to these points, and exchanged against imports of goods, the principal of which was cloth. At these *escales* markets were held only at fixed seasons, and trade outside them was prohibited. Europeans could not attend in person, but had to transact their business through native or half-caste middlemen (*traitants*). Each vessel anchoring at the *escales* paid 600 francs, and each village on the bank by which it passed exacted its own contributions. The Arab chiefs, who were supposed to police the markets, made the French pay dearly for services which they did not supply, and it is estimated that the system cost the French merchants at St. Louis 1,500,000 francs annually.

Faidherbe. In addition to this, marauders crossed the river almost every year, and petitions from the merchants in St. Louis convinced the government of Napoleon III that action must be taken which would establish security once and for all. Faidherbe was

appointed Governor of Senegal in 1854, and his policy was stated by himself as follows: 'We must dictate our will to the Arab chiefs on the question of the gum trade. The escales must be abolished, by force if persuasion fails. . . . We must suppress all tribute paid by us to riparian tribes . . . we must be the suzerains of the river . . . and protect the agricultural populations on the left bank against the Arabs.'

The Emir of Trarza, Mohammed el Abib, kept an agent in St. Louis for the purpose of collecting his dues, and, notwithstanding his treaties, still pretended to a suzerainty over the Ouolofs in Oualo on the left bank of the river. In January 1855 he demanded that the French should evacuate certain islands in the neighbourhood of St. Louis. Faidherbe's answer was to lead the garrison out against the Arabs. On 15 February he surprised their camp at Diekten near Richard Toll, and subsequently defeated their vassals the Ouolofs in several combats. Then, as his only concern was the security of the colony of Senegal, he offered Mohammed el Abib peace if he would renounce the coutumes. The Arab replied by demanding their increase, the destruction of French forts, the prohibition of armed vessels on the Senegal, and the recall of Faidherbe. In April 1855, during Faidherbe's absence from St. Louis, Mohammed el Abib advanced to its gates, declaring that that evening he would worship Allah in the cathedral. He was, however, driven off. Faidherbe then devoted himself to a war of attrition, and set himself to destroy the Arabs' cattle and supplies. Even so, in January 1856 he took 600 prisoners in an engagement near Lake Cayar. His tactics gradually had their effect, and several tribes submitted. The most important were those of Douaich, with whom Faidherbe made a treaty in November 1857. But Mohammed el Abib held on, and in 1857 invaded Oualo again, only to suffer heavy defeats. At last he sued for peace, and on 20 May 1858 he signed a treaty by which he renounced all claims on the left bank of the Senegal. He placed himself and his people under French protection and his subjects were forbidden to cross the river without express French permission. The escales were abolished and the trade in gum was opened to all. The coutumes were suppressed, but in return Faidherbe allowed the Arabs a duty of 3 per cent. on all gum exported from their territory. This duty was to be collected by the French, and to be handed over by them to the native authorities. A similar treaty was concluded with the Brakna Arabs in June. These treaties, revised later to give the chiefs a fixed payment instead of a percentage on the exports from their territories,

fulfilled their object, which was the peace and security of the trade of Senegal.

This object accomplished, France remained disinterested in the internal affairs of the emirates for the rest of the century. The only exception was in 1892, when the Emir of Adrar entered into a treaty, by which he engaged to have no relations with any European Power other than France and by which he received in exchange an annual payment of 800 guinéés.

Exploration. There was, however, some exploration of the country. In 1824 René Caillié, in preparation for his journey to Timbuktu, lived in Trarza and Brakna in order to learn Arabic and the customs of Islam. In 1849 Léopold Panet, a native of Senegal, was instructed to open a route from St. Louis to Algiers. He was turned back at Boutilimit, but in 1850 he succeeded in travelling to Mogador via Chinguetti.

On the instructions of Faidherbe, Captain Vincent explored Adrar in 1860, but he was forbidden to enter Atar. He returned to St. Louis, but his native companion, Bou el Mogdad, went on to Mogador. In the same year Alioune Sal, a Spahi native officer, traversed Brakna and Tagant and reached Oualata. Held prisoner and maltreated by El Hadj Omar, he eventually escaped, arriving at Bakel in December 1862.

In 1880 Paul Soleillet explored Trarza in connexion with a project for a railway across the Sahara, but on entering Adrar he was arrested, robbed, and forced to retire.

In 1887 Camille Douls, disguised as an itinerant trader, explored a great part of northern Mauritania. He finally arrived at Mogador in great straits, and was repatriated to France. Next year he returned and attempted to reach Timbuktu from Tangier, but was murdered on the way.

In March 1900 a scientific mission, escorted by a force of tirailleurs, left St. Louis under Paul Blanchet. Its object was to study the geological formation of the region of Adrar and the salt deposits of Ijil. It was well received at Atar by the Emir, but his attitude soon changed and the mission was attacked and besieged. The escort cut their way out, leaving the scientists prisoners. Through the good offices of the Emir of Trarza they were later ransomed, but Blanchet died at Dakar on 6 September. It is possible that this attack had been supported by the Sultan of Morocco, Abd el Aziz, who was at that time anxious to extend his influence southward. However this may have been, France, which was tacitly recognized by the other European Powers as the future suzerain of the country, reluctantly

decided that the time had come to intervene effectively north of the Senegal.

The Occupation, 1902-1914

In 1902 Ahmed Saloum, Emir of Trarza, alleged that he was being prevented by rebels from carrying out the trade obligations into which he had entered, and an expedition was sent to re-establish his authority. In return, Ahmed Saloum consented to accept French protection and a French resident, and to forgo the duties which he had hitherto received on gum collected in his territory. No sooner had the column retired, however, than revolt broke out again. It was obvious that the emirs were either unable or unwilling to restrain their tribesmen, and the French Government began the programme on which it had previously decided. This was the progressive penetration and effective occupation of Trarza, Brakna, Tagant, and Adrar. The boundaries of this territory with Rio de Oro had already been agreed upon between Paris and Madrid on 27 June 1900.

Coppolani. Xavier Coppolani was the man chosen by the Governor-General to carry out this policy. He had already had much experience of Moslem politics, and had been most successful in 1898-1899 in negotiating the peaceful surrender of many tribes in the north-west of the Sudan. His method was to take advantage of local dissensions, and to work as far as possible through the religious authorities. In December 1902 at Dagana, after getting the mallams on his side, he succeeded in inducing the Emir Ahmed Saloum to abandon his royal prerogatives, and in persuading him that French occupation of his country would be a benefit sent from God. He then created French posts at Sehout el Ma (at the north-east corner of Lake Cayar), Kroufa, Boutilimit, and Nouakchott, thus firmly occupying the country without firing a shot. In June 1903 he was nominated delegate of the Governor-General with full powers over justice, nomination of kadis, and the collection of taxes. He repeated his successful tactics with the Brakna Arabs, persuading Sidi Eli to abandon his sovereignty to the French, and installing French garrisons at Aleg and other places. Though occupied and temporarily quiet, the country was far from pacified, as subsequent events were to show. Even so, it was separated from Senegal. By the decree of 18 October 1904 it became a civil territory under a Commissioner (Coppolani) directly responsible to the Governor-General, who had in 1902 ceased to combine that office with the governorship of Senegal. The new territory received the name of Mauritania.

After having arranged for the dispatch of an expedition to study the possibilities of developing the fishing industry in Lévrier bay, Coppolani set out in February 1905 on a mission which he hoped would result in the peaceful submission of Tagant, and possibly in the penetration of Adrar. On arrival at Tidjikdja on 2 April, he found the population friendly and received encouraging messages of support from the tribes to the east with whom he had made treaties several years earlier. He also received messages of submission from the Arabs of Douaich, who had been in revolt and whose camp at Bou Gadoum, 26 miles east of Kiffa, had been surprised on 1 April by a French detachment with the aid of Kounta allies. Although the population of Tagant was generally well disposed, Sidi Ahmen, Emir of Adrar, was determined that French penetration should not reach his territory. At his instigation, therefore, and at that of Ma el Ainine, a mallam of Smara in Rio de Oro, whose influence was widely spread, Coppolani was murdered by twenty fanatics on 12 May 1905.

Gouraud and Patey. Naturally this event put an end to all hopes of a peaceful settlement in Tagant and Adrar. The Emir of Adrar invaded Tagant and the French garrison of Tidjikdja was besieged in June. It was rescued by a relieving column from the south, but all hopes of further penetration to the north were for the time being abandoned.

In October 1906 Moulay Idriss, an emissary of Abd el Aziz, Sultan of Morocco, delivered to the French at Tidjikdja an ultimatum requiring the evacuation of Tagant. He then proceeded to invade the district at the head of several hundred warriors. On 24 October in an engagement at Niemelane 22 miles south-west of Tidjikdja two French officers were killed, and as a result Moulay Idriss besieged Tidjikdja. Though he was repulsed after a month's siege, the French were in no position to pursue him into Adrar. Abd el Aziz was forced to abdicate early in 1908, and the new Sultan, Moulay Hafid, being more favourable to the French, withdrew his support from the local emirs.

Under Colonel Gouraud, who was appointed Commissioner in 1907, Tagant was occupied, and the pacification of the south generally completed, though not without bloodshed. Akjoujt was occupied at the beginning of 1908, but for the rest of the year both it and Tagant were menaced by adherents of Ma el Ainine, who preached a holy war on the French from the safe shelter of Spanish territory. In the guerrilla warfare which lasted from July to December of that year, the French suffered 125 attacks from the adherents of Ma el Ainine

and the Emir of Adrar, which cost them the lives of 142 soldiers, of whom 8 were Europeans. In addition enormous depredations of camels and cattle were suffered by friendly tribes. It was clear that this state of things would be only stopped by the effective occupation of Adrar, and this was begun in December 1908. Gouraud set out from Moudjéria during that month with a column which comprised 1,000 camels besides a few cavalry and some light artillery. He was supported by a smaller force based on Boutilimit. Atar surrendered in January 1909, the inhabitants, who were leading a sedentary life among their date palms, being glad to be free of the exactions of the nomads. The warriors of Ma el Ainine were not finally dispersed until September, when Gouraud reached the salt beds of Ijil with a column of 500 camel troops. The rebels fled into Spanish territory.

Submissions continued in 1909 and 1910, and Colonel Patey, who succeeded Gouraud, organized the tribes under chiefs selected by him, reduced the number of small fixed garrisons, and concentrated his forces in larger garrisons (*postes de nomadisation*). From these larger garrisons strong flying columns could be sent out as occasion required. The country was sufficiently calm for the geologist Chudeau to study the structure of the massif of Adrar, while on the coast it was found possible to equip a fishery station at Port Etienne. In January 1912 Tichitt was occupied after resistance, and in the same year Oualata was occupied without resistance by troops from Mauritania co-operating with those of French Sudan. Raids directed from Smara continued to trouble Mauritania, and in 1913 Colonel Mouret organized a strong force to attack El Hiba, Ma el Ainine's successor, in his own stronghold. On 10 March the French were victorious at Oued Tagliatt. Minor raids still continued, however, the raiders withdrawing into Spanish territory or the north when pursued by camel patrols; but in 1914 the Emir of Adrar, accompanied by several of his vassals, came to St. Louis and made his submission.

At the outbreak of war in that year numerous assurances of loyalty were received from the chiefs, and, though the habitual raids continued, there was no organized attempt to throw off French control.

The Colony

A decree of 4 December 1920 freed Mauritania from the direct control of the Governor-General, and it became the Colony of Mauritania with an organization similar to that of the other colonies of the Federation.

Though there has been no concerted movement against the French

since that date, the habits of centuries are not easily eradicated, and recent history has shown a series of raids of varying severity. In 1924 and again in 1927 Port Etienne itself was attacked. In 1931 a raid organized from Spanish territory by a grandson of Ma el Ainine cost the life of thirty French soldiers (among them four Europeans) before it was driven back over the border, and there was a further raid from the same base in 1932. To deal with these, the camel patrols were supported by airborne and motor-borne troops both from Mauritania and from French Morocco. There have been complaints by France against the Spanish authorities; but in 1936 the Sheik el Oueli, an influential member of Ma el Ainine's family, crossed the border of Rio de Oro with his followers and voluntarily submitted to the French authorities at Atar.

The colony of Mauritania has been expensive to maintain, and in 1932 the proposal to divide its territory between the colonies of Senegal and French Sudan was seriously considered. Owing to shortage of staff due to inadequate revenue, it has not been found possible to introduce through the whole of the colony the system of direct rule normal in French West Africa; and in 1934 the ancient emirates of Trarza, Tagant, and Adrar were formally reconstituted. Though provinces of those names exist each under a Commissioner, much more than usual power is entrusted to the native authorities.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

THE area of the colony is 328,190 square miles, and the population in 1937 was 370,764, giving the exceedingly low density of 1.13 persons per square mile. Even this figure distorts the picture; for about half the colony is pure desert, incapable of sustaining human life and with a density of under 0.3 persons per square mile. The only region that is even moderately well populated is the right bank of the Senegal, where there is some agriculture.

In 1917 the population was estimated to be 256,000; in 1921 it was 261,746; in 1926 it was 289,184; and in 1931 it was 323,819. This represents a steady increase, for which the strong administration of the French, with its suppression of raids and warfare, can take the credit.

Natives. The most numerous natives are the Arabs, who number just under 250,000. There are also some 47,000 Toucouleur, 21,000

Mandingos, and 5,000 Fulani, with smaller groups of Ouolofs and others.

In 1937 there were 181 native citizens.

Europeans. The 1937 Census recorded the presence in the colony of 351 Europeans. Most of these were presumably colonial civil servants or army officers, but there were a few European traders resident in Port Etienne, Nouakchott, Atar, and other towns.

INLAND TOWNS

ATAR ($20^{\circ} 33'$; $13^{\circ} 08'$ W.). Altitude, 758 feet. Population, *c.* 500.

Provincial headquarters. Medical post. Military post. Meteorological station. Landing-ground. Wireless station. Garage.

Atar is at the foot of the western edge of Dahar Adrar. There is good water available, and the settlement is of considerable, though uncertain, antiquity. It was captured on 9 January 1909 by Colonel Gouraud, who set up a military post.

To-day it is the headquarters of the province of Adrar. Detachments of the armoured car and camel corps are stationed there, and help to guard the frontier with Rio de Oro. It is on the Ligne de Mauritanie, being 537 miles from St. Louis, 303 miles from Nouakchott, 427 miles from Bir Moghreïne, and 778 miles from Tindouf (Algeria). Along this road there is a fortnightly bus service to Nouakchott and Rosso. To the east a desert track leads to Chinguetti (48 miles) and Ouadane (119 miles). To the west an exceptionally rough track can be used to reach Port Etienne, some 300 miles away.

Travellers can be accommodated at the military post.

IJIL (FORT GOURAUD) ($22^{\circ} 41'$; $12^{\circ} 43'$ W.). Altitude, 1,247 feet.

Medical post. Military post. Emergency landing-ground. Wireless station.

This place owes its existence chiefly to the French, although there is a small native village. Beside an old well the modern military post has been built and the Imperial road runs through it. It is 724 miles from St. Louis, 187 miles from Atar, 240 miles from Bir Moghreïne, and 591 miles from Tindouf.

KAÉDI ($16^{\circ} 15'$; $13^{\circ} 32'$ W.). Altitude, 96 feet. Population, 3,169.

Provincial headquarters. Medical post. Regional School. Daily market.

On the right bank of the Senegal, Kaédi is a minor river port. Some trade is done, the local tribesmen bringing gum in exchange for

tea and sugar. On the river itself a fortnightly steamer service affords a connexion with St. Louis (356 miles) in one direction and with Kayes (259 miles) in the other.

Kaédi is the headquarters of the province of Gorgol. From the town one track runs eastwards to M'Bout (65 miles) and north-eastwards to Kiffa (152 miles), and another north-eastwards to Moud-jéria (161 miles). It is 12 miles from Diorbivol (Senegal).

TIDJIKDJA ($18^{\circ} 29'$; $11^{\circ} 32' W.$). Altitude, 1,181 feet. Population, 2,134. Provincial headquarters. Medical post. Military post. Emergency landing-ground. Wireless station. Daily market.

As has already been said, Coppolani was murdered here on 12 May 1905, and the military post is now called Fort Coppolani in his memory. This post and the town are in a hollow amidst rugged country. Water is available in considerable quantity, and there is an oasis estimated to contain 1,000 wells and 40,000 date palms. The date harvest is the occasion of a large annual fair, which usually lasts from 1 July to 15 August.

Tidjikdja is the headquarters of the province of Tagant. Tracks lead south-west, south, and east respectively to Boghé (263 miles), Kiffa (156 miles) and Kayes (319 miles), and Tichitt (141 miles) and Oualata (378 miles).

9. ADMINISTRATION

MAURITANIA is the third largest colony in the Federation. It has, however, the smallest population and no great trade or industry. It follows, therefore, that it is by far the poorest; and it cannot maintain the establishment or afford the developments of the richer colonies. Its capital, St. Louis, is geographically in Senegal; several of its services, such as the educational, are helped out by officers of that neighbouring colony; and to police the tribes of the extreme north the aid of patrols from French Morocco is still required. These facts should be borne in mind when the administrative services are considered.

Councils

The colony has no representative on the Supreme Council of the French Colonial Empire.

The Executive Council is composed of the Governor, the Chief Financial Officer, the Attorney-General of Senegal, the officer commanding the troops, two French citizens, and two French subjects.

All of these last four are nominated by the Governor-General on the recommendation of the Governor. Their term of office is two years,

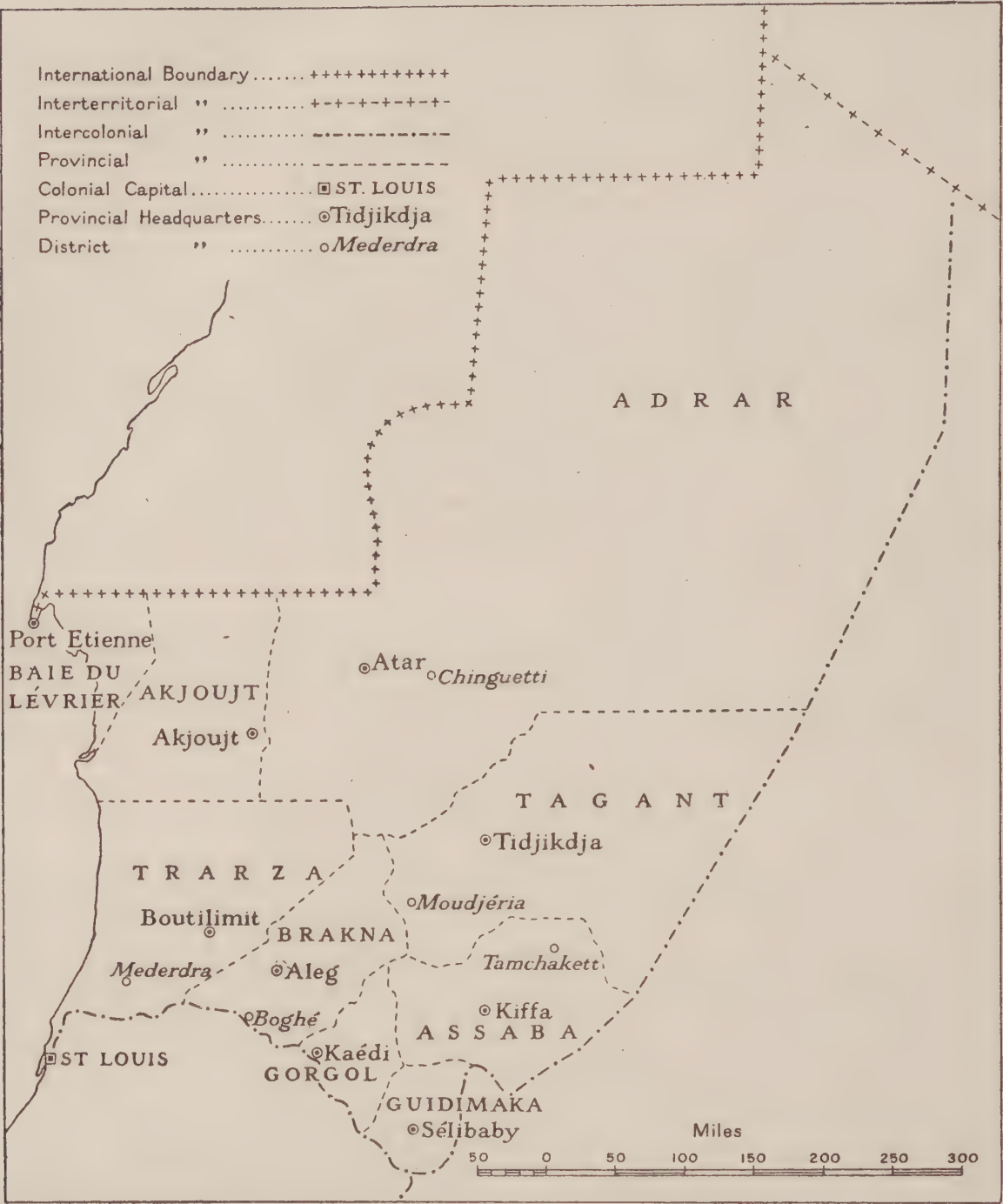


FIG. 40. Mauritania: Administrative Divisions

but they are eligible for reappointment. The Standing Committee of the Council consists of the Governor, the Attorney-General, one citizen, and one subject.

There are no communes and no Chambers of Commerce or of Agriculture.

Territorial Divisions

There are nine provinces (Fig. 40), which are of widely differing sizes. In some of them there are Councils of Notables.

<i>Province</i>	<i>Headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Adrar	Atar	191,098	Chinguetti
Akjoujt	Akjoujt	18,292	..
Assaba	Kiffa	17,102	Tamchakett
Baie du Lévrier	Port Etienne	5,803	..
Brakna	Aleg	14,273	Boghé
Gorgol	Kaédi	6,500	..
Guidimaka	Sélibaby	5,679	..
Tagant	Tidjikdja	43,320	Moudjéria, Tichitt
Trarza	Boutilimit	26,033	Mederdra

Courts of Law

There are no separate French courts, and justice is administered to French citizens by the courts of Senegal. There is no native court above the grade of a Tribunal of the Second Degree.

Native Organization

There are more superior chiefs than in any other colony. This is partly because it has been so recently pacified and partly because many of its inhabitants are nomads. The Emirate of Trarza has not yet met the fate of so many native principalities, and other tribal heads still enjoy a substantial measure of power. The provinces of Adrar and Tagant see little of French rule other than that of camel corps or of motor-borne patrols. The ancient Arab tribal system has, therefore, been but little affected.

Land Tenure

Up to the end of 1937 no concessions had been granted and no land immatriculated. Under the system of Confirmation of Native Land Rights 14 titles had been registered, covering an area of 612 acres.

Labour

In 1935 there were 47,100 persons on the forced labour rolls, 226,000 man-days were worked, and 15,500 francs paid in redemption money. In 1936 there were no natives working under written contracts either for European firms or in the public service, and only 100 were returned as being permanently employed by private businesses. There were no figures for casual labour.

Native Provident Societies

The first Mauritanian society was formed in 1922 at Boghé in a district inhabited mainly by negro farmers. For some years, however, the movement made no progress, for most of the inhabitants were firstly nomads with little inclination for agriculture and secondly Moslems whose religion prohibited loans at interest. The latter objection was met in 1926 by an order which transformed the interest on the loan into a sum for the expenses of administration, and in 1927 a second society was formed, this one being in Tagant. There are now seven societies, whose income in 1937 was 73,000 francs (£448) and whose expenditure was 45,000 francs (£276). Besides making loans and distributing seeds to their members, these societies have spent money on stock-breeding and on the improvement of water supplies.

Education

There are no European officers of the education service permanently stationed in the colony, the higher direction being given from St. Louis. - Apart from the special Moslem schools (*medersas*), there are no educational facilities above the primary stage for boys and none at all for girls. In 1938 there were 16 native teachers, 3 Village Schools with a total of 247 pupils, 2 Regional Schools with a total of 229 pupils, and 3 medersas with a total of 114 pupils. Not reckoning the 3,780 pupils in the ordinary Moslem schools, there were, therefore, in 1938 only 590 boys receiving instruction. No doubt a few boys attended the higher schools at St. Louis.

Health

In 1937 there were 9 European medical officers, but no European nursing or administrative staff. There were 7 native auxiliary doctors and 23 nurses. There was no major hospital, but there were 10 subsidiary hospitals, 7 maternity centres, and 8 medical posts. Between them these establishments provided 1 bed for European patients and 12 beds for native.

10. PORTS

PORT ETIENNE (20° 54'; 17° 03' W.). Population (1936), 954, including 37 Europeans. Provincial headquarters. Custom-house. Medical post. Military post. Meteorological station. Landing-ground. Wireless station.



91. *Chinguetti*



92. St. Louis: Government House (Mauritania)

Port Etienne (Plate 93) stands on the north-west of Cansado bay, the western offshoot of Lévrier bay. It is the sole port of the colony. It was founded in 1906 as a military post, but it owes what prosperity it has to its fishing industry. Its remoteness and the poverty of its hinterland make future development improbable; and it seems likely to remain a straggling collection of buildings on the edge of the desert.

The Residency is near the shore of a shallow corner named Samphire cove; and the blockhouse is a quarter of a mile south-south-west. Immediately south of the blockhouse is the fish factory.

The town is the headquarters of the province of Baie du Lévrier.

The Fishing Industry

Between Cape Blanco and Cape Iouik lies one of the richest fishing-grounds in the Atlantic Ocean. Sardines, bass, and mullet are found, together with lobsters, crayfish, oysters, and shrimps.

In 1840 M. Sabin Berthelot, French Consul at Teneriffe, drew attention to the potentialities of this region, and between 1905 and 1908 M. Gruvel and M. Bourjat made more detailed studies with a view to the development of fishing. In 1919 the Société Industrielle de la Grande Pêche was founded and set up a factory at Port Etienne. Economic depression caused the company to sell its boats in 1932; but three years later work was restarted.

In that year, 1935, a catch was made representing 2,300 tons of fresh fish, 1,150 tons of salted fish, and 600 tons of dried fish. Of this catch 434 tons of salted fish and 5 tons of dried spawn (*poutargne*) went to French and British West African colonies. Boats of three companies from the Canary islands also caught 4,500 tons of fish, and trawlers from Brittany took 150 tons of crayfish. This last figure was less than half the average annual haul. There were also other boats from Europe, some with refrigerated holds; but, as their catch was not landed at Port Etienne, the total weight of fish for the year cannot be computed.

Much fish is dried and salted for local consumption, salt being obtained from the seabkras, but more is exported. In the first quarter of 1939 the Gold Coast took 52 tons and French Equatorial Africa 41 tons. Smaller quantities were sent to the Belgian Congo.

By-products, such as fish glue and oil, are prepared at the factory. If the water-supply and the port facilities were better, the industry might be capable of considerable expansion.

Description of Port

Vessels anchor in Lévrier bay in up to 27 feet of water. Cargo is unloaded by lighter.

Piers. The main pier has recently been lengthened to 165 feet and is extended by a gangway of 40 feet and a landing-stage of 26 feet. Depths alongside are about 10 feet at H.W.S.T. The pier stands outside Samphire cove, but there is a smaller pier inside it.

Equipment. On the main pier there is a 3-ton crane, a Decauville track leading to the factory, and a water distilling plant. There are workshops capable of making minor repairs to trawlers.

Communications

Road. There is a track that goes across the north of the colony to the Imperial road at Atar (310 miles). There are also several tracks into Rio de Oro.

Air. The airfield is 2 miles north-east of the blockhouse, but it is not on a main air route. Cansado bay provides good anchorage for seaplanes.

Wireless. The wireless station adjoins the airfield.

Shipping. There are regular steamship services with Dakar and with Villa Cisneros. Ships call to revictual the port and to load fish.

II. MINERALS

THE only mineral actively exploited is salt, which is used for fish curing at Port Etienne and elsewhere. The main workings are at the sebkra near Ijil, where salt has been mined for centuries. The method of extraction is much the same as at Taoudenni (p. 209). At the beginning of the present century the annual production was some 3,000 tons, but in recent years this has declined to about 450 tons. Most of this is sent by camel to Atar or Chinguetti. Another sebkra, at N'Terert in south-western Trarza, is said to contain large quantities of good salt.

A crude mixture of earth and salt is found in the coastal marshes and the inland depressions of Trarza and Tagant and also in Adrar and Hodh (French Sudan). This is known as *amersal*, and it is fed to livestock.

12. AGRICULTURE

AGRICULTURE is confined to the oases and to the right bank of the Senegal. Here alone is water available and here alone does the desert

relax its iron grip. Conditions are so hard that, except for the date palm, cultivation is almost entirely for subsistence: there is small remainder for sale or export.

Food Crops

Millet and Maize. Millet is the principal food crop. It is grown chiefly in Chemama, which is flooded annually by the Senegal, in Assaba, which is watered by the Gorgols and the Karakoro, and, to a small extent, in Tagant and Adrar. No recent figures have been published, but over 38,000 tons were produced in 1930. Maize is grown entirely in the south, and is usually harvested somewhat before millet. The annual production is estimated to be 5,000 tons.

Rice. Some 500 tons of rice are produced each year in the provinces of Brakna, Gorgol, and Guidimaka. Its cultivation is mainly in the hands of women.

Other Crops. Water-melons (*Citrullus vulgaris*) are common throughout the colony. Some of them are wild and some cultivated, and they form a valuable supplement to the drinking-water supplies. The wild or dwarf date palm (*Phoenix reclinata*) is found in small clumps where there is enough water. It has spiny stems, and the fruit is smaller than that of the cultivated species. Its young fronds and midribs are used in the weaving of mats and other light articles.

Wheat, barley, indigo, tobacco, castor oil, and henna are also produced.



FIG. 41. *Date Palm*

Economic Crops

Dates. The date palm (*Phoenix dactylifera*) is one of the oldest of cultivated plants, having been used in ancient Assyria, Phoenicia, and Egypt. It is the most graceful of the palms (Fig. 41), and it is often planted for ornamental purposes beside mosques and other buildings. In desert regions its fruit, pressed into cakes, is the main article of the traveller's diet. For export the fruit is dried, and, in this state, more than half its weight is sugar.

The largest groves in Mauritania are near Atar and Chinguetti in Adrar, near Tidjikdja and Rachid in Tagant, and near Abiod Jirel in Assaba. In 1938 5,000 young palms were planted at Tidjikdja and a new grove was begun near Moudjéria. In the same year about 4,000 tons of dates were produced, much of which was bartered for millet. In 1938 there were over 170,000 palms in Adrar, Tagant, and Assaba.

Gum Arabic. Gum arabic is the product of various species of acacia, the two principal being *Acacia senegal* and *Acacia arabica*. Of these the latter has given its name to the product, but the former is commercially more important, as its gum is harder. *Acacia senegal* is grown from seed. The gum is obtained by tearing off a strip of bark, and the tree is in full bearing from its fourth to its twentieth or twenty-fifth year. The fibre is very tough and is used for ropes and nets.

The early history of the gum trade has been given in Section 7, but at the end of the nineteenth century the price of gum declined and the Arabs began to turn away from its cultivation. To counteract this the Government made regulations to protect the plantations from over-tapping, from fire, and from the depredations of livestock. A decree of 3 October 1938 sanctioned an annual grant of 1 franc per tree.

To-day the largest plantations are near Mederdra and in Iguidi, a little farther north. Most of the gum is marketed at Podor and exported through Dakar.

Livestock

Sheep and Goats. Sheep and goats together are five times as numerous as all other livestock combined, and in 1938 they numbered some 1,800,000. The sheep are bred mainly for slaughter, and the Touabir breeds of Chemama and Assaba give mutton of comparatively good quality. The average weight of each sheep is about 180 lb., and there is a steady export of skins to Senegal and French Sudan. In the north and east of the colony the local Arabs breed sheep with coats of short wool that is used for making tents.

Cattle. Cattle are of the zebu type and are kept almost entirely in

Trarza. They probably number rather more than 200,000. They are very hardy, and, as they can carry up to 200 lb. each, they are frequently used as beasts of burden. Their own average weight is 800 lb.

Camels. Throughout the colony camels are widely used for riding and as beasts of burden. They can go without water for several days, but, contrary to popular belief, they need long periods of recuperation. An animal in good condition can carry up to half a ton. In 1938 there were at least 67,000 camels in the colony. Their meat and milk are useful and their skins are made into tents and saddles. During the ground-nut harvest many of them are hired by Senegalese farmers.

Donkeys. There are some 60,000 donkeys of the small hardy type. They are valuable as pack animals, since they are easy to feed and can carry a load of 200 lb.

Horses. The Arabs of Adrar and Tagant breed horses, which have all the grace, speed, and stamina of their prototypes from Arabia proper. There is also a smaller breed kept in other provinces. All told, however, there are probably not more than 3,000 horses in the whole colony.

Experimental Stations

There are experimental stations at Mederdra (gum and sheep), Iouida (gum), Bou Hajera (Borassus palms), 10 miles north of Rosso, and Korkoro (livestock) near Sélibaby.

13. COMMERCE AND FINANCE

COMMERCE

Imports. The only imports listed are cotton cloths, oil fuel, rice, and sugar, although most of the tea imported into Senegal finds its way into Mauritania. Details of the imports are given in Table IV. It is explained below (p. 458) that the total figures for *Commerce Spécial* are combined with those of Senegal and French Sudan.

TABLE IV. *Imports, 1935-1937*

		1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
Guinéés and similar cloths	1,000 m. ¹	..	..	82	113,300	..	..
Other cotton cloths .	tons	12	246,103	14	160,081	19	428,443
Oil fuel	"	23	34,172	10	14,100	1	2,475
Rice	"	99	36,804	61	46,205	168	214,270
Sugar	"	95	44,743	177	874,361	47	83,932

¹ 1,094 yards.

Exports. The solitary export listed is dried fish and shrimps. Of these 417 tons worth 759,354 francs were exported in 1935, 650 tons worth 1,641,990 francs in 1936, and 496 tons worth 973,055 francs in 1937. In prosperous years, however, the natives also barter their surplus grain and dates for the European goods of Senegal.

FINANCE

THE budget for 1938 balanced at 18,507,000 francs (£113,540). The published details were as follows:

Revenue

	<i>Francs</i>
Direct taxes	4,815,000
Customs and excise	1,007,000
Posts, telegraphs, &c.	359,000
Grants and subsidies	11,309,000
Previous withdrawals from the Reserve Bank	707,000
Receipts from previous financial years	100,000
Sundry receipts	210,000
TOTAL	18,507,000

Expenditure

	<i>Francs</i>
Debt charges	89,000
Salaries of administrative staffs	5,323,000
Other administrative expenses	2,092,000
Posts, telegraphs, &c. (salaries and wages)	1,002,000
Posts, telegraphs, &c. (plant and materials)	800,000
Public works	1,292,000
Social and economic departments (salaries)	1,081,000
Social and economic departments (other expenditure)	1,039,000
Sundry disbursements (salaries)	50,000
Sundry disbursements (plant and materials)	1,026,000
Unforeseen expenses	18,000
Police forces for the Sahara	4,485,000
Extraordinary expenditure	210,000
TOTAL	18,507,000

The Mauritanian budget is very similar to that for other colonies, save that the modest importance of the colony is reflected in its finances. Its total revenue, indeed, is the lowest of all. With regard to the desert police forces, it has already been shown in Volume I, p. 346, that the General Budget for 1938 allocated 3,335,000 francs as the federal share in their maintenance.

The poll-tax of other colonies is not paid by the natives in Mauri-

tania. It is replaced by the Moslem tithes on crops (*ashur*) and on livestock (*zekat*).

14. COMMUNICATIONS

ROADS

APART from the Senegal (p. 461), roads form the sole means of communication within the colony. The term 'roads' is itself slightly misleading, as there is only one Imperial road and a number of desert tracks.

Of the latter the principal are shown on Fig. 36. Those in the southern part of the colony are reasonably practicable, but the ancient route from Oualata in French Sudan to Tindouf in Algeria runs across some extremely difficult country.

Itinerary. The Imperial road, having begun at St. Louis, 66 miles away, crosses the Senegal at Rosso. From there it goes northwards to Mederdra (38 miles) and Nouakchott (168 miles). It then bears north-eastwards to Akjoujt (347 miles) and Atar (471 miles). From the latter a track connects to Chinguetti and Ouadane, respectively 48 and 119 miles distant. The Imperial road then runs approximately parallel to the border of Rio de Oro. It passes through Ijil (658 miles), Bir Moghreïne (898 miles), and Ain bene Tili (1,051 miles) to cross the Algerian border at 1,208 miles. Tindouf lies 41 miles farther north-north-east.

Bus Services. In 1939 there was a fortnightly service between Rosso, Mederdra, Nouakchott, Akjoujt, and Atar, and a monthly one between Rosso, Mederdra, and Boutilimit. The former of these two services had a journey time of 3 days and was run in connexion with the steamer service at Rosso.

SIGNALS

Telegraphs

Telegraph lines run from Dagana (Senegal) to Mederdra, Boutilimit, and Aleg, from Boghé and Aleg to Moudjéria and Tidjikdja, and from Kaédi to Diorbivol (Senegal).

Wireless

There is a number of wireless stations, mainly of low power and controlled by the army, which supplement the very poor telegraph service. Details are given in Table V. In 1939 messages to France cost 9·75 francs (1s. 5d.) a word.

TABLE V. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Akjoujt . . .	19° 46' N. 14° 22' W.	3 short	0·01 and unknown	Commercial station. In- terior service.
Aleg . . .	17° 04' N. 13° 58' W.	3 short	0·025	Commercial station. In- terior service.
Atar . . .	20° 33' N. 13° 08' W.	2 short	0·1 0·5	Commercial station. In- terior service. Meteoro- logical bulletins.
Atar . . .	Unknown	1 short	Unknown	Military and military air station.
Atar Aéradio and Aérogonio . . .	20° 33' N. 13° 04' W.	4 medium 4 short	0·1 0·15	Aeronautical and direc- tion-finding station. Meteorological bulle- tins.
Boutilimit . . .	17° 32' N. 14° 41' W.	4 short	0·02 0·01 and unknown	Commercial station. In- terior service.
Chinguetti . . .	20° 26' N. 12° 26' W.	4 short	0·25 0·1	Commercial station. In- terior service.
Chinguetti . . .	Unknown	1 short	Unknown	Military and military air station.
Ijil . . .	22° 41' N. 12° 43' W.	4 short	Unknown	Commercial station. In- terior service.
Ijil Aéradio . . .	22° 41' N. 12° 43' W.	2 medium 3 short	0·15	Aeronautical station.
Koedia d'Ijil . . .	Unknown	Short	Unknown	Military and military air station.
Moudjéria . . .	17° 51' N. 12° 20' W.	3 short	0·01	Commercial station. In- terior service.
Nouakchott . . .	18° 06' N. 15° 59' W.	4 short	0·005 and unknown	Commercial station. In- terior service.
Nouakchott Aéradio . . .	18° 08' N. 15° 56' W.	1 medium	0·1	Aeronautical station.
Port Etienne . . .	20° 54' N. 17° 03' W.	3 medium	1·0	Coast and military sta- tion.
Port Etienne Aéradio and Aérogonio . . .	20° 54' N. 17° 03' W.	2 medium 4 short	1·0 0·5	Aeronautical and direc- tion-finding station. Communicates with Dakar and French Mo- rocco.
Tamchakett . . .	17° 16' N. 10° 42' W.	1 short	0·008	Commercial station. In- terior service.
Tazadit . . .	22° 41' N. 12° 25' W.	1 short	Unknown	Military and military air station.
Tichitt . . .	18° 20' N. 9° 31' W.	2 short	0·02	Commercial station. In- terior service.
Tidjikdja . . .	18° 29' N. 11° 32' W.	4 short	0·0004 and unknown	Commercial station. In- terior service.



FIG. 42. Niger

CHAPTER VII

NIGER

I. GENERAL

Area: 501,933 square miles. Population (1937): 1,809,576. Density per square mile: 3.61. Capital: Niamey.

OF the two great territories to which the river Niger has given its name, this is at once the larger and the less important. The dense forests, productive mines, rich grasslands, and large towns of its southern neighbour are absent; and in their stead are monotonous plains, rugged mountains, and empty deserts. Only near the rivers can crops be grown, and can men live without perpetual fear of drought.

The colony stretches from $10^{\circ} 58' \text{ N.}$ to $23^{\circ} 00' \text{ N.}$ and from $1^{\circ} 25' \text{ W.}$ to $16^{\circ} 00' \text{ E.}$ Its extreme length is 650 miles and its extreme width 1,025 miles.

Boundaries. For 80 miles upstream from the Nigerian frontier the Niger forms the intercolonial boundary with Dahomey. After that the Mekrou is followed, also upstream, as far as $11^{\circ} 51' \text{ N.}$, $2^{\circ} 13' \text{ E.}$ From there the boundary twists south-west along part of a ridge of the Atakora highlands until it strikes the Pendjari, which is used as far as a point 5 miles south-west of Porga. The boundary, now with Togo, runs west and west-north-west for some 50 miles to the Ivory Coast. It then turns a little west of north and maintains that general direction until it is 35 miles south-west of Dori. It then turns more definitely north-west and leaves the Ivory Coast 46 miles from that town and almost due west of it. At first the boundary with French Sudan zigzags across the savanna, but after $14^{\circ} 43' \text{ N.}$, $1^{\circ} 25' \text{ W.}$, the colony's westernmost point, it runs north-east, east, and south-east to cross the Niger just below the Labbezenga rapids. For its next 178 miles the boundary goes a little north of east, but then turns north-east up the valley of the Ahzar and Amachkalo ouadis, north across a small plateau, and east-north-east through some hills. This brings it to $17^{\circ} 00' \text{ N.}$, $4^{\circ} 17' \text{ E.}$, from where it goes almost due north to leave French Sudan at $19^{\circ} 12' \text{ N.}$, $4^{\circ} 16' \text{ E.}$ From this point the interterritorial boundary with Algeria runs in a series of straight lines across the desert: east-north-east for 100 miles,

north-east for 214 miles to In Azaoua, and east-north-east for 428 miles to $23^{\circ} 00' \text{ N.}$, $12^{\circ} 58' \text{ E.}$ This is the meeting-point of Algeria, French West Africa, and Libya. From here the international frontier goes east-south-east to Toummo, east to Ehi Toummo Doma, and, in accordance with the Treaty of Rome of 1935, east-south-east to Ehi Domar. This is a mesa standing at $22^{\circ} 12' \text{ N.}$, $15^{\circ} 35' \text{ E.}$, and it marks the common point of Libya, French West Africa, and French Equatorial Africa. The interterritorial boundary between the two latter then goes due south to $21^{\circ} 02' \text{ N.}$ before winding south-eastwards through the foothills of the Tibesti mountains to $20^{\circ} 23' \text{ N.}$, $16^{\circ} 00' \text{ E.}$ From this point the boundary runs a little west of south for rather more than 250 miles before turning south-west. A straight line 272 miles long brings it to $15^{\circ} 00' \text{ N.}$, $13^{\circ} 38' \text{ E.}$, and another straight line carries it due south to Binger island in the middle of Lake Chad. The international frontier with Nigeria strikes due west to Bosso, a village at the mouth of the Komadougou Yobe. For some 140 miles upstream this ouadi marks the frontier, but after that the latter branches west-north-west and then west. It maintains a general direction slightly north of west as far as $4^{\circ} 15' \text{ E.}$, but it makes a northward curve to within 30 miles of Tessaoua and another and larger one to a point 20 miles east-north-east of Birni-n'Konni. At $13^{\circ} 30' \text{ N.}$, $4^{\circ} 15' \text{ E.}$ it turns south for 22 miles and then curves south-west, and, finally, it twists southwards to its starting-point on the Niger.

Bibliography. The following books have been useful in the compilation of this chapter:

ABADIE, M. *La Colonie du Niger*. Paris, 1927.

RODD, F. R. *People of the Veil*. London, 1926.

URVOY, Y. *Histoire des Populations du Soudan Central*. Paris, 1936.

2. PHYSICAL DESCRIPTION AND GEOLOGY

ALTHOUGH the colony has some of the highest mountains in the Federation, most of its surface is flat and monotonous. This is true alike of the scrub-covered lowlands draining to the Niger and of the deserts which lie to the east of Air.

The geological structure is relatively simple. In the south-west the swampy plains of Gourma are made up of Archaean gneisses locally capped by masses of Tertiary sandstones. Eastwards and north-eastwards a low-lying basin of Mesozoic and Tertiary sedi-

ments stretches for 300 miles and gives rise to desert and sub-desert plains. Those in the provinces of Dosso, Niamey, and Tillabéry are of Upper Tertiary sandstones, those in Konni of Eocene clays and limestones, and those in Tahoua of Cretaceous-Eocene marls. In the north the massif of Aïr is due to Archaean gneisses and granites, with some volcanic lavas, tuffs, and ashes of Quaternary age. South of Aïr is the Tagama plateau, a great expanse of sandstone desert of Cretaceous age. In the detached hilly chains of Damagarim and Mounio and along the Nigerian frontier old granites, granulites, and pegmatites are dominant. To the east of Aïr and Tagama sand-dunes extend north-eastwards to the Palaeozoic sandstones and Archaean schists and gneisses of the Tasili-Ahaggar dome and south-eastwards to Lake Chad.

The Niger Valley

Throughout its passage across the colony rapids encumber the Niger and rocky islands and sandbanks split it into several channels. A curious feature is that its major flood is during the dry season. South-west of the river the flat plains that form part of the Archaean plateau rise gradually to the Moshi highlands in French Sudan. Seasonal rivers, flowing in from the west, have cut wide, shallow valleys into the lateritized surface, and the impervious underlying rocks increase the duration and extent of the floods. North of Dori rather more broken country encloses the Gorouol valley.

The Central Plains and Valleys

Sandstone and clay plains, heavily encrusted with laterite, lie to the east and north-east of the river. The great ouadis that drain Adrar des Ifoghas, Ahaggar, and Aïr seam the flat surface with wide, shallow, but steep-sided valleys (*dallols*). Of these the Dallol Bosso and the Dallol Maouri are the best known, the former crossing the whole colony from north to south. Sand is in scattered patches on the surface, but has collected in the valleys. The mesas which rise here and there are less steep-sided than in areas of harder rock. Surface water is rare, and there are only four known permanent wells. These rather featureless plains cover an area of nearly 40,000 square miles and extend without a break northwards into French Sudan and south-eastwards into Nigeria. North-eastwards they end in Adrar Aouelaouel and in the irregular scarp east of Tahoua. The former has a vast expanse of static dunes to its south and overlooks

the Tesellamane depression. The rich seasonal pasture of this huge swamp is in marked contrast to the barren plains between the ouadis that radiate from it to Ahaggar and Aïr. South and east of Tahoua is a limestone area which has been dissected into a complicated mass of low scarped hills capped with laterite. These fall away on longitude 6° E. to a barren sandy plain which stretches to the Gangara–Abalemma road. It is almost uninhabited except along the valley of the Goulbi Kaba and its southern tributaries, and the vegetation is very poor. The Goulbi Kaba drains most of the country between Tagama and Nigeria. Its northern tributaries have eroded the flat sandstone of the former and exposed the underlying clay in wide valleys; its marshy headwaters lie among the rounded prairies of Damergou; and its southern tributaries rise near Zinder in the Damagarim region. Here the water-table is shallow (7 feet) in contrast to that of Damergou; there are some perennial lakes; and short stretches of the ouadis become rivers in the proper sense of that term. Granite tors rise like islands through the sand which fills the valleys, and schists form rocky mesas. Away to the east are two rocky areas, one north and the other south of Gouré; to the north the region of Koutous is a small plateau with deep sandy valleys; and to the south, in Mounio, there is a granite ‘archipelago’. Shallow wells and seasonal meres are in the sand which flanks these tors. Eastwards the relief flattens to the wastes of Manga, and rolling plains and flat valleys fall gently to the marshes of Lake Chad. After the rains, meres form in the sand-filled valleys and the waters of Lake Chad spread into the colony.

The North-East

From Manga dunes stretch almost unbroken northwards to the boundary. They are mostly unexplored, and they are unmapped save along the few tracks. Except in the north-east there are only three known groups of hills: first, the massif of Termet, whose rounded slopes lie 200 miles north-east of Zinder; second, the granite tors which rise east of Fachi; and third, the line of rounded hills alongside the N’Guigmi–Bilma track north from latitude 17° . In the north-east of the colony older schists and sandstones outcrop to form a wide area of broken country which rises to the col that joins Ahaggar to Tibesti. Hammada and reg predominate. Ouadis have deeply eroded the original surface, so that gorges and terraces now separate mesas which are of varying size and whose tops lie between 2,500 and 3,000 feet. The boldest country lies close north-east of Chirfa,



93. *Port Etienne*



94. *The Niger between Niamey and Ansongo*



95. *Floods in Tegama*

and the largest area of high land is the Mangueni plateau on the border.

The barren plains of northern Tagama end northwards in the Tidjeddi scarp. This is between 60 and 200 feet high, and runs north-west from just north of Abalemma to In Gall and north-east for a similar distance. North of it is a wide east-west depression which collects the drainage from southern Air and sweeps north-west past the hills round In Gall to join the Dallol Bosso. Its hard gravelly plains are furrowed by deep-cut gullies which in the wet season turn into almost impassable mud flats. To its north are the foothills of Air.

Air

This superb mass of mountains is about 250 miles from north to south and 150 miles from east to west at its widest on latitude $8^{\circ} 30' N$. It is composed of volcanic rocks of Quaternary age, which have been poured out over the ancient Archaean platform, old gneisses forming much high ground in the centre. The main mountain groups are the Tarazit massif (3,478 ft.); the Tamgak mountains (4,921 ft.) east of Iferouane; the Aguellal massif and the Agamgam mountains; the Baguezane mountains (4,593 ft.), which tower 2,000 feet above Aoudéras; and the Tarouadji mountains, 70 miles north-east of Agades. A line joining these massifs roughly marks the watershed, for Air is mainly drained west to Tesselamane. Those ouadis flowing east are short and soon disappear beneath the sands of Ténéré. Only in the south-east do they unite and turn south into the great ouadi Ziguédoufar which runs from east to west across Tagama. The volcanic activity is represented to-day by basalt flows, cinder cones, and deposits of tuffs and ashes. The mountains usually rise sheer from broad flat valleys, and the minor tributaries are short deep gorges. The main valleys are sandy and relatively densely covered with grass and bushes, where boulders are not heaped. These striking differences in rock and plant delight and fascinate the eye. To quote Mr. F. R. Rodd,

‘... This is the charm of the country that has been called by travellers the Saharan Alps. There is contrast everywhere, but nothing is perhaps more striking than the black patina which the red rocks have assumed. The wind-borne sand has polished them till they shine with a dark metallic gleam, while the sheltered rifts and ravines retain their pink and red surfaces. It is a land of lurid colour, except at mid-day, when the African sun dominates everything in one blinding glare.’

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	Latitude N.	Longitude	Altitude in feet
Bilma	18° 43'	12° 56' E.	1,171
Agades	16° 59'	7° 56' E.	1,706
Tahoua	14° 56'	5° 17' E.	1,230
Tillabéry	14° 25'	1° 26' E.	646
Dori	14° 02'	0° 03' W.	1,066
Birni-n'Konni	13° 48'	5° 18' E.	c. 850
Zinder	13° 46'	8° 59' E.	1,676
Niamey	13° 31'	2° 06' E.	709
Mainé Soroa	13° 14'	12° 03' E.	c. 1,000
Fada N'Gourma	12° 04'	0° 20' E.	961

THE colony's climatic year is divided into two parts. From October to April there is a long dry season with north-east winds, very clear skies, and no rain at all. From May to September there is a short wet season with south-west winds, cloudier skies, and rain of varying intensity. In the south this wet season has a duration of about 4 months. Its length and the total rainfall decrease northwards and eastwards, until, north of about latitude 20°, there is no regular rain. Temperatures are high, but relative humidity is generally low, and there is a large diurnal range.

Pressure (Fig. 58)

Except in July the highest pressure lies to the north. The gradient is steepest in January, when there is a difference of some 4 or 5 mb. between north and south. In other months the difference is no more than 3 mb.

TABLE I. *Mean Daily Pressure (1000+millibars)
reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Zinder	16	15	12	10	09	12	13	14	13	12	14	16	13	7
Niamey	13	12	09	08	09	11	13	12	13	11	12	13	11	5

Annual changes in pressure and the differences between north and south at any season are not, however, so important as the diurnal range. This, as elsewhere in West Africa, is considerable. Variations of 3 or 4 mb. are normal throughout the year, and may be as much as 6 mb. in the dry season. Readings are highest about

10.00 a.m. and lowest about 4.00 p.m., with a secondary maximum and minimum respectively at 10.00 p.m. and 4.00 a.m.

Winds (Fig. 23)

Surface Winds. For much of the year the harmattan, blowing from north-east or east, is dominant over the whole colony. Between May and October it is interrupted by the moist south-westerly winds of the monsoon for a period whose length varies inversely with latitude.

North of the latitude of central Air (18° N.) the harmattan is persistent all the year, but it is light and variable. Southwards from this latitude the harmattan is supreme from October to March, and is at its steadiest in December. In the south its direction is sometimes south-easterly. Blowing as it does from the Sahara, it is dust-laden and very dry. Haze is common, and stationary objects are quickly covered with a film of dust. Its intense evaporation sucks up every drop of moisture and reduces body temperatures appreciably. On occasion it may be so strong as completely to alter the configuration of dunes in a few hours.

The monsoon reaches Niamey between April and May, spreads north until August, and then retreats in September and October (Fig. 43). At its northern limits the monsoon is variable and feeble. It often has a southerly or south-easterly direction, and even in July and August it is frequently interrupted for short periods by the harmattan.

Both these surface currents are shallow, the upper limit of the monsoon being well defined at about 3,000 feet. Their speed normally does not exceed 5 m.p.h., and they are stronger in the morning than in the evening. Broadly speaking, the greatest wind speeds of the year are recorded as the monsoon is advancing.

Along the northern edge of the monsoon tornadoes sometimes blow up from an easterly direction, heralding their approach by a wall of yellow dust that rises high into the air. The Niger tornadoes are smaller in diameter and more frequently dry than those of the rest of West Africa, but they are still very destructive. If rain falls it lays the preceding dust almost at once, but if not haze lasts for several days. The worst month for tornadoes is June, when Niamey has an average of two a week, but May, July, August, and September also have many of them.

Local whirlwinds (dust devils) may also blow in the same months. Their movement is slow and erratic, but their winds are strong

enough to lift and carry away tents. These storms are, however, rarely more than from 50 to 100 feet in diameter and their effects are purely local. They form under clear skies about midday, and

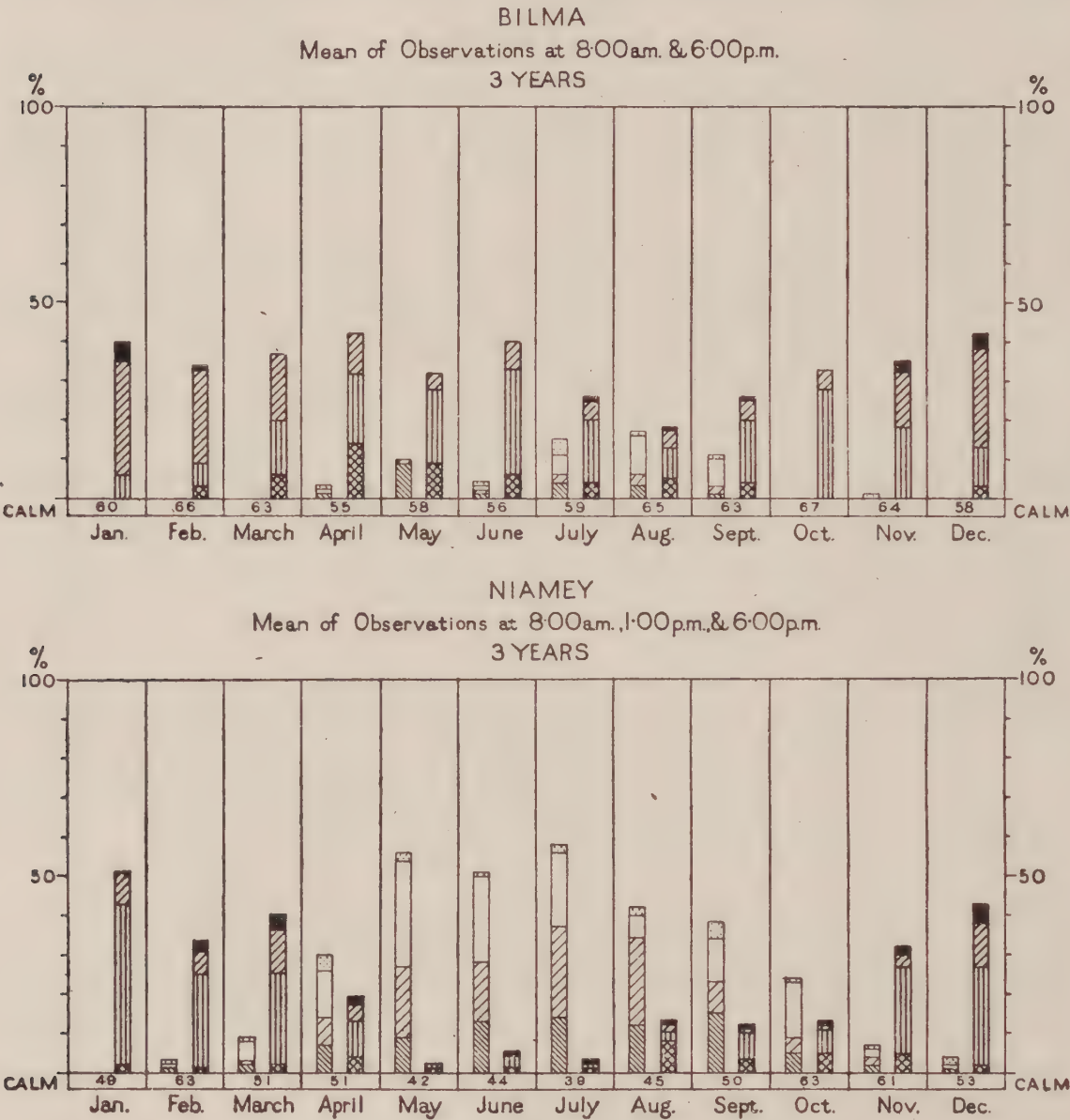


FIG. 43. *Niger: Surface Winds.* (For Key see Fig. 6)

their funnel-shaped pillars of sand, hundreds of feet high, are visible for considerable distances. Several whirls may be seen close together over a small area; but, unless they pass very close to him, an observer will feel no effect from them.

Upper Winds. The upper winds are similar to those of the rest of the Federation; that is to say, a dry but hazy easterly current lies above the surface winds, and higher still are westerlies. The easterlies extend to very great heights above the monsoon, but are relatively shallow above the harmattan.

Rainfall, Cloud, and Thunder

Rainfall. Between April and November rain spreads north as far as latitude 20° with the monsoon. Its start in the north is, therefore, later and its duration shorter than in the south. Both are as variable as the total fall for any month or year. Along latitude 12° the wet season begins in April and is well established by June, when the first rains are being felt on latitude 18° . Even in the south at the height of the season several fine days usually separate two storms, but falls are torrential and generally occur during the afternoon: in Aïr, for instance, over an inch has fallen in 30 minutes, and at Kano nearly 4 inches during an afternoon in August. The damage to houses, crops, and roads can well be appreciated. Storms are, however, very local and may be in full view without a drop of rain falling on the observer. In the north years may pass without any precipitation. The evaporation is so great that rain is often seen falling from heavy black clouds, without any reaching the ground.

Cloud. On an average cloud amounts are everywhere small, but greater in the south than in the north. During the dry season figures are exceptionally low, but there is a general increase in the wet season. Daily variations are considerable. Stratus and cirrus are common in the morning, especially in the dry season, and often give a high cloudiness figure, but with the rains there is a greater proportion of convection clouds.

Thunder. Thunderstorms are a product of the monsoon, and, in consequence, they are unknown between November and March. Although they are more frequent in the north than in the south, everywhere their greatest number is in July or August. They are very variable in extent, course, and wind circulation, and they break and cease with equal suddenness. Most of them come in the afternoon, but some at night. If they approach from the east or north-east they bring violent squalls. While a storm lasts thunder and lightning are intense and almost continuous, but rain does not always fall.

Temperature and Humidity

Temperatures are high throughout the year, but, except in August in the south, the relative humidity is low. The colony is not, therefore, unhealthy for Europeans, but the climate may prohibit some of their normal activities. In 1925, for example, disaster attended the first attempt to fly across the colony, the aircraft crashing just after having taken off. Examination of the debris suggested that the

TABLE II. Mean Rainfall

R = Rainfall in inches. X = Maximum fall in 24 hours. D = Number of rain-days.

Station	Yrs. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Bilma	10	R	0	0	0.01	..	0	0.08	0.49	0.26	0	0	0	0.84
		X	0	0	0.08	0.01	0	0.39	1.18	1.34	0	0	0	1.34
		D	0	0	0.1	0.1	0	0.6	1.4	0.7	0	0	0	2.9
Agades	10	R	0	..	0.01	0.22	0.33	1.94	3.67	0.72	0	0	0	6.89
		X	0	0.01	0.09	1.30	0.51	2.36	1.72	1.38	0	0	0	2.36
		D	0	0.1	0.1	1.1	2.2	5.7	9.3	2.3	0	0	0	20.8
Tahoua	10	R	0	0.01	0.10	0.65	1.87	4.29	5.43	2.04	0.70	0	0	15.09
		X	0	0.10	0.45	2.24	1.60	5.18	3.19	1.01	3.01	0	0	5.18
		D	0	0.1	0.6	2.4	5.6	9.1	10.8	7.8	1.0	0	0	37.4
Zinder	10	R	0	0	0.01	0.69	2.69	6.39	8.37	3.32	0.11	0	0	21.57
		X	0	0	0.08	1.18	1.85	3.50	4.24	2.30	0.43	0	0	4.24
		D	0	0	0.2	3.4	7.1	10.0	14.1	8.0	0.4	0	0	43.2
Niamey	10	R	0.01	0.24	0.29	1.29	2.84	5.19	7.42	3.74	0.52	0.03	0	21.57
		X	0.04	0.06	2.13	2.58	1.96	2.03	3.03	2.13	2.33	0.32	0	3.03
		D	0.1	0.1	0.3	4.9	7.4	11.0	14.4	8.3	1.6	0.1	0	49.8
Mainé Soroa	3-4	R	0	0.07	0	0.92	1.45	5.22	6.43	3.21	0.23	0	0	17.53
		X	0	0.20	0	1.06	1.52	2.91	1.61	1.09	0.48	0	0	2.91
		D	0	0.3	0	3.0	3.8	7.8	10.0	7.8	1.0	0	0	33.7
Fada N'Gourma	9-10	R	0.01	0.22	0.37	3.55	5.17	6.58	9.33	5.85	0.66	0.13	0	32.81
		X	0.09	1.86	1.15	2.88	2.72	3.74	2.47	3.23	0.91	0.43	0	3.74
		D	0.1	0.3	0.9	6.9	8.9	9.4	13.4	11.3	2.3	0.6	0	56.8



96. *Aïr*



97. *Kori and palm grove at Timia*



98. *The valley of Tafadeck*

immediate cause of the accident was climatic: the excessive heat had expanded the metal controls, while the extreme dryness had contracted the wooden struts.

Temperatures. In January there is a northward decrease in temperatures. In July the position is reversed, for, although there has everywhere been a rapid increase, rain lowers the temperatures appreciably in the south. Variations from the means may be considerable in any year.

In the south of the colony mean daily maximum and minimum screen temperatures are at their lowest in January. They rise until April or May, fall with the rains until August, and rise again in September or October, only to fall once more to the January figures. The minima lag behind the maxima by about a month in their

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Bilma	79	84	94	103	109	111	108	104	106	102	91	82	98	32
	43	47	55	62	70	72	74	74	70	60	53	47	61	31
Agades	82	92	101	108	112	111	106	102	106	105	94	90	101	30
	50	53	61	69	77	76	74	73	73	68	59	53	65	27
Dori	91	98	104	109	107	102	94	90	94	102	99	94	99	19
	57	58	67	73	78	75	72	71	71	72	66	59	68	21
Zinder	89	96	103	109	108	104	95	91	97	103	97	91	98	20
	55	59	67	73	79	76	72	71	71	71	65	59	68	24
Niamey	94	99	105	110	107	102	96	91	94	102	102	96	100	19
	57	60	68	75	80	77	74	72	73	73	64	59	69	23

spring rise and do not reach their highest until May; but their midsummer fall is not so marked and the autumn rise hardly shows. Sun temperatures from 130° to 140° are common especially in the dry season, and rock surfaces reach 160° . As in other dry and cloudless countries, there are great diurnal variations. The normal range is 40° to 50° in the dry, and 30° in the wet season. The uncertain waters of Lake Chad and the rare occasions when the night has been overcast provide the only exceptions and reduce the range to 10° or 20° . Clouds may cause a fall of a few degrees in as many minutes, and rain and tornadoes invariably lower the temperatures sharply.

In the north the annual temperature curves are different. For an altitude of 1,000 feet mean daily maximum and minimum figures are about 80° and 45° respectively in January, and there is a single maximum for both at about 110° and 75° in July. The diurnal range is again great. After the minima just before dawn, there is a very rapid rise in the early morning. Maxima are recorded at about

2.00 p.m. Temperatures in the open are anything from 20° to 30° higher than those in the screen, and on one occasion at least the rock surface has registered 170°. Irregular variations are rare.

Humidity. As with so many other climatic factors, variations depend upon the wind direction. Relative humidity is at its lowest between February and April under the harmattan. Means of 70

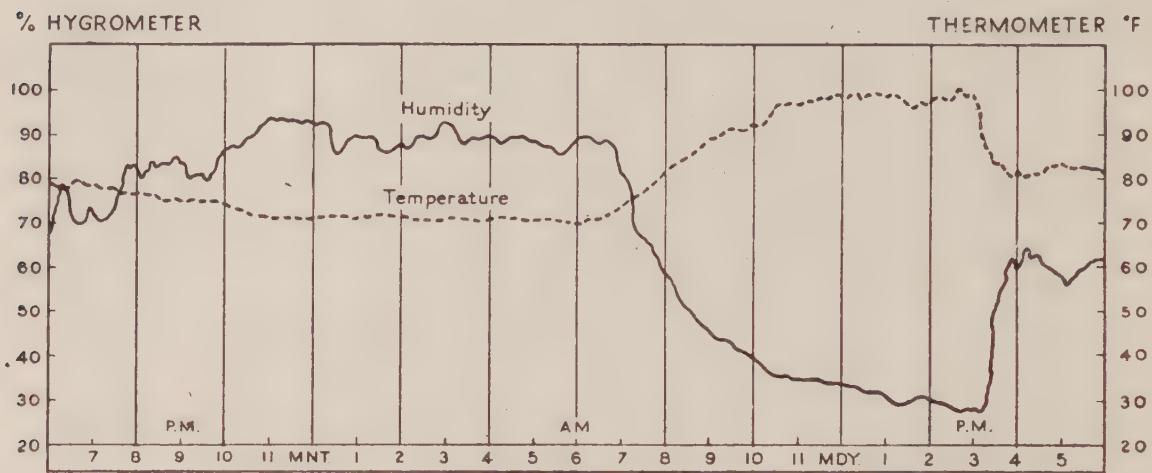


FIG. 44. Zinder: A Night of Exceptional Humidity followed by an Afternoon Storm

per cent. or more, at their highest in August, are normal with the monsoon. Humidity decreases northwards whatever the season, until in northern Niger very dry conditions are the rule all the year. In the immediate vicinity of Lake Chad the atmosphere is slightly moister at high water, that is to say between August and January.

TABLE IV. Mean Relative Humidity (percentages)

Two observations: 8.00 a.m. and 6.00 p.m. Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

Station	7.	F.	M.	A.	M.	7.	7.	A.	S.	O.	N.	D.	Year	Annual Range
Bilma	58	48	35	32	32	33	45	56	46	41	48	54	44	24
	40	38	30	29	32	31	36	43	38	37	42	42	37	14
Agades	29	28	23	21	23	30	45	57	41	29	30	31	32	36
	28	26	25	22	24	28	37	49	38	35	34	26	31	26
Zinder	21	19	16	20	44	53	68	76	68	40	25	29	40	60
	12	12	10	10	20	28	48	56	44	22	18	20	25	46
	17	17	14	15	28	36	53	67	54	33	25	27	32	53
Niamey	34	29	31	39	59	64	75	84	81	67	46	37	54	55
	16	13	14	18	31	39	51	64	57	33	19	16	31	51
	20	16	20	22	40	43	59	74	71	49	29	24	39	58

Although the vapour pressure decreases only slightly from morning to afternoon, diurnal variations of relative humidity are greater. Abrupt changes occur with rain storms (Fig. 44).

Although, as stated above, the drier conditions are healthier than the wetter for Europeans, extremes of both can be very unpleasant. During the wet season a rainy day may be followed by a night whose humidity, 90 per cent. or more, saturates clothes and bedding. Such steamy heat is as enervating as the wet season on the Guinea coast. At the other extreme, with humidity as low as 5 per cent., wood shrinks, vegetation shrivels, leather cracks, and human nails split and break.

Dew is uncommon, except on high ground during the wet season.

Visibility

In so far as generalization is possible for so vast a country, surface visibility may be said to be at its best during the rains. This is, of course, subject to the obvious qualification that low cloud may cause severe temporary interference. Annual means for the south are from 15 to 20 miles in the morning and from 11 to 18 miles in the evening, and at Niamey the morning and afternoon means for June and July are as much as 27 miles. The upper air, however, is hazy.

Visibility is at its worst between December and March. The dust of the harmattan causes such haze that aircraft between Zinder and Lamy sometimes lose their way and are forced to land.

Diurnal variations are usually large but irregular. Near Lake Chad and other marshy areas morning mists are common, and local deterioration is caused by rain, bush fires, and sand storms. These last may reduce visibility to nil. The first sign of one of them is usually a distant reddish haze. Then, low on the horizon, a yellow cloud appears, which, as it approaches, rises in clouds of whirling sand. The storm bursts, and everything is engulfed in a maelstrom of choking dust. The sky is darkened and the hissing of the sand drowns all other noises. Eyes, ears, noses, mouths, clothes, tents, and equipment are filled with the fine particles, and objects on the ground may be buried several inches deep. Such storms are soon over, but for some hours after them the sun appears only as a dull orange ball.

North of latitude 15° mirages are often seen.

AÏR

The mountains of Aïr differ in many essentials from the rest of the colony, and a special study of their climate was made by Mr. F. R. Rodd (now Lord Rennell of Rodd) during his expeditions of 1922 and 1927. In particular, he observed that the rainfall is, like

that of Adrar des Ifoghas, much heavier than that of the surrounding lowlands.

Pressure and Winds. Pressure is remarkably consistent from day to day, but there is a large diurnal range of 4 mb. or more, explicable by the great range of temperature.

There is the normal alternation of the two main surface winds, but their variability is intensified by the mountains. The monsoon is never very firmly established and, even in August, it is often swept away by the harmattan. Such interference is, in fact, the chief cause of rain. On most days the wind is distinctly stronger at midday.

Thunderstorms, Rain, and Cloud. The mountainous relief is also mainly responsible for the high number of thunderstorms, for the prevalence of lightning, and for the great variations in rainfall. The rainy months are from June to September, but falls are very local and quite irregular. Most rain occurs between noon and sunset in short torrential showers. A clear sunny sky may suddenly become overcast with black clouds, and it will be raining heavily within five minutes. In August falls of 1 or 2 inches per hour are common, causing violent floods in valleys that are normally dry.

In general, cloud amounts are small. Only in July and August is there any great increase, but even in the latter, the mean is only 6 tenths of sky covered. In spite of the prevalence of stratus and cirrus during the mornings of the dry season, the clearest skies occur in the early morning at all times of year, and there is more cloud at midday and in the afternoons.

Temperature. The mean temperature shows a distinct double maximum in June and September. The figures, reduced to an average height of 2,000 feet, read as follows:

<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
86.3	88.6	89.1	87.1	83.0	88.4	86.8	77.0	68.6

The decrease for August, associated with the monsoon rain, is almost confined to the daily maxima, which average 10° below those of July: there is a fall of only 2° or 3° in the corresponding night temperatures and they do not rise again in September. Daily variations are large. The very regular fall during the night ceases abruptly at dawn, and there is a sharp rise during the early morning. Conditions in the afternoon vary according to the state of the air. When it is dry and clear, there is usually a flattened maximum of 2 or 3 hours just after midday, followed by a rapid but steady fall to the night minimum. When it is wet, afternoon storms cause a drop

of many degrees in a few minutes. As a result, the latter part of the daily curve shows a distinct step in its downward course.

Relative Humidity. Humidity is very variable, both from month to month and from day to day, but in general the latter conforms closely to the temperature changes. Means only exceed 70 per cent. during the month of August, and there is a rapid decrease immediately afterwards. In September and October figures below 10 per cent. have been recorded on more than one occasion. The average for the rest of the year is 30 per cent. Vapour pressure is normally higher in the morning than in the afternoon, but its minimum occurs about 10.00 a.m., a few hours before that of the relative humidity. Fig. 45 shows pressure, temperature, and relative humidity on two typical days, the first of which had a heavy fall of rain.

Visibility. Haze is general between December and April. Visibility is normally at its best in May and June and in November. The worst conditions occur between July and October with low cloud and with sand storms, which are often the precursors of rain. Diurnal variations are considerable but quite irregular.

Mirages and dust devils were observed by Mr. Rodd on several occasions, and dew was noted by him on 22 nights in August 1927. Hoar frost has been recorded at high levels in January.



FIG. 45. Air: Readings on Two Days in September 1922

Meteorological Services

Intermittent records have been kept with varying accuracy at many stations in the colony, but the only regular and trustworthy statistics are those for Niamey and Zinder. These two stations are adequately equipped with up-to-date and reliable instruments for both surface and upper air. Their weather reports are included in the synoptic forecasts broadcast from Bamako, together with those from stations of secondary importance at Agades, Bilma, Birnin'Konni, Dori, Fada N'Gourma, Mainé Soroa, and Tahoua. There are twelve other places recording rainfall; among them is Tillabéry, which also has thermometers and an anemometer.

5. VEGETATION

THE vegetational zones represented in Niger are, from north to south, central Saharan, south Saharan, thornland, and grass-woodland. The boundaries of these zones, especially of the northern ones, are often ill defined, and transitional belts have been recognized. North of about 19° or 20° N. there is extreme desert; from this latitude southwards to about 15° or 16° N. is the south Saharan zone; from 15° or 16° N. south to about 12° N. is the thornland zone; and south of this the Sudan subzone of the grass-woodland zone. The Guinea subzone of this last zone only extends from the south into the Sudan subzone as fringing and valley forests. This distribution of the main vegetational types is clearly correlated with the climatic conditions. Indeed, the west-to-east belts of vegetation are more clearly marked in Niger than anywhere else in West Africa.

The Desert

The extreme desert is deprived of closed vegetation except locally in a few favoured ouadis and oases. The south Saharan zone is a patchy transition belt between the central Sahara to the north and the thornland to the south. Large parts of this zone are essentially desert, especially from the economic point of view, but there are more favoured areas where 'forests', better termed brushwoods, of acacias and other woody plants tap a water-table not far below the surface of the ground. Thus the *tamat*, also known as Shittim wood or thirsty-thorn (*Acacia seyal*), forms dense thickets south of Aïr, although these are only 6 to 12 feet high and leafless most of the dry season. It is also very common in the neighbourhood of Agades.

The African myrrh (*Commiphora africana*), often known as *aderas*, also frequently forms pure scrub thickets in the south of the zone, again linking this on to the thornland. Particulars regarding the Air region have been given in Volume I, p. 106.

The Thornland

In the thornland the woody communities are mainly composed of trees and shrubs with strong development of spines. They differ considerably in different areas in density and height, and range from a comparatively dense community with a maximum height of about 40 feet to a scattered scrub of stunted habit. The canopy, however, is rarely closed and there is often a fair growth of grass; but this is never so tall or so dense as in the grass-woodland to the south. The most highly developed community is that of *Acacia raddiana* and the African myrrh, which occurs in the southern part of the zone up to the limit of unirrigated cultivation. North of this limit the commonest acacia is the tamat, again often in association with the African myrrh, which forms an adequate ground cover but averages 20 feet in height at the most. Mainly on rocky outcrops throughout the zone the balsam spurge (*Euphorbia balsamifera*) is frequently found with acacias.

In many of the dallols the Borassus palm (*Borassus aethiopum*) is dominant in a mixed woody vegetation which flourishes in areas with a high water-table. In dallols south of Gangara there occurs a mixed acacia, chew-stick (*Anogeissus schimperi*), and tamarind (*Tamarindus indica*) community. North of Tahoua, again in dallol areas, acacias of several species are mixed with a considerable variety of other woody and often spiny plants (species of *Balanites*, *Bauhinia*, *Boscia*, *Celtis*, *Combretum*, &c.). In the west of the colony is a region of wide laterite ridges capping sandstone and separated by shallow valleys; the latter are cultivated, but the ridges carry a low scrub mainly composed of species of *Combretum*.

The Grass-Woodland

In the extreme south-west of the colony, south of Niamey, there is a relatively small area occupied by the Sudan subzone of the grass-woodland zone. The vegetation is composed of trees, either isolated or in clumps, scattered in grassland, the latter being usually continuous and often luxuriant. The flora is richer in species and the woody growth naturally better developed than in the more northern zones, but periodic firing of grassland and brushwood has degrading

effects more marked and more extensive than in the thornland. Fringing forests or riparian woodland are often a conspicuous feature.

6. THE PEOPLE

TUAREG

IN French West Africa the principal representatives of the Berbers are the Tuareg (sing. *Targui*), one of the best known peoples of the whole continent. Their own name for themselves is Imajorem (sing. *Imchar*). They live mainly north of the Niger, but some of them are found south of it in the Timbuktu district.

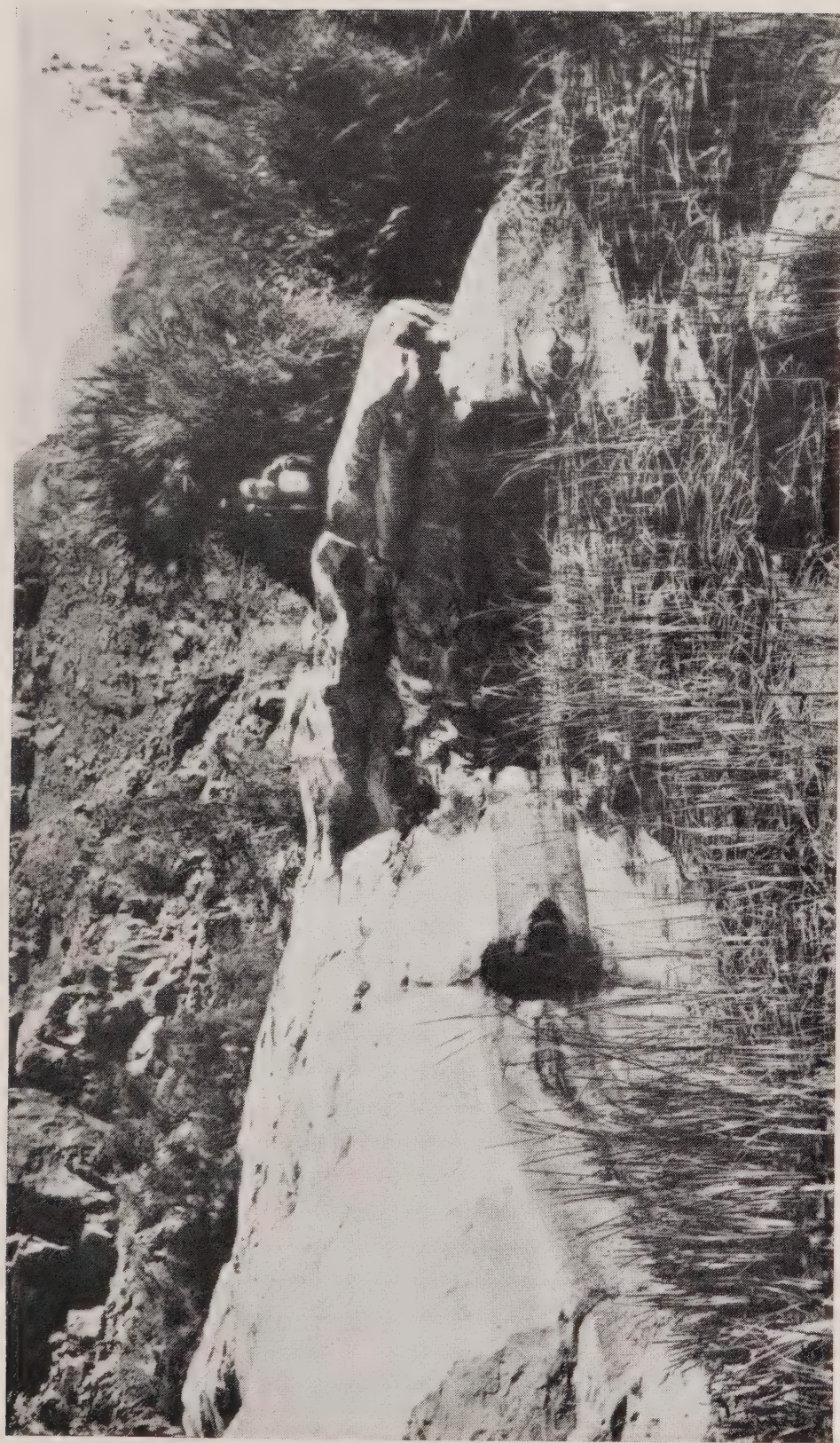
Origins. Their origins are obscure. Their ancestry is traced by legends variously from the Philistines, from the Queen of Sheba, from Mohammed, from some of his first disciples, and from the Crusaders of St. Louis. Their Palaeolithic home is placed by some scholars in Aquitaine, but in historical times they almost certainly came from Egypt and from Fezzan. Contact with the Romans is indicated by their use of Romance names for the solar months, and contact with Christianity by the cruciform shape of many of their ornaments. Their earliest settlements in central Africa were probably near Lake Chad, and may have been made in the eighth century A.D. About three hundred years later there was a migration of Tuareg into Aïr, from which some of them moved still farther westward. These movements did not cease until the eighteenth century, although their details are unknown.

To-day their numbers are declining.

Physical Characteristics. The Tuareg (Plate 100) are of medium height (5 ft. 6 in.), lean, and well built. They have fine and regular features, small noses, graceful wrists and ankles, and well-arched feet. The women are rather smaller than the men, and they are usually much fatter.

The Tuareg's speech is slow and deliberate, and they are given to long palavers. Travellers have spoken of the long periods of time necessary before questions are fully answered. On the whole, they are proud, brave, courteous, and hospitable, but they are also greedy, deceitful, and treacherous.

Dress. The celebrated veil (*litham* or *tagilmus*) is worn by all men aged 25 and over, but no entirely satisfactory explanation of this habit has ever been given. If it were purely a precaution against glare, sand, or dust, the women and children might also be expected to be veiled. If it were to prevent a man being recognized, it would



99. *A well in Aïr*



100. *A Targui*

have to be more effective for that purpose than it actually is. More tenable theories suggest that it is believed either to ward off evil spirits, which might otherwise enter the body through the mouth or nostrils, or to prevent a man's spirit leaving his body by those means. Even if this is so, it seems curious that young men are not similarly protected. It is reasonably certain that the Tuareg wore veils before they were converted to Islam, so that such beliefs are the survivals of an animistic past.

When about 16 years old, a Targui youth will put on the trousers that most Moslems wear, and 2 or 3 years later he will begin to carry a sword and to wear an arm-ring. After this he is recognized as an individual man. He is not, however, reckoned a full man until he has assumed the veil, which may be from 5 to 7 years later. In this veil he lives, eats, and sleeps; and he will not unveil himself before anyone.

The veil itself is composed of a long strip of indigo cloth, woven and dyed in the Sudan. The best quality is made of six narrow strips about 1 inch wide, sewn together edge to edge. The material and the open stitching leave plenty of room for the air to pass through, and even a considerable degree of transparency. The veil is put on in the following manner. One-half of the length is folded over three times into a band only $2\frac{1}{2}$ inches wide. The part where the full breadth begins is placed over the forehead low enough to cover the nose; the narrow band is to the right, the broad part to the left. The latter is then passed round the back of the head and looped up under the narrow part, which is wound round the head on top of the broad portion so as to hold the latter in place. The broad part over the nose is pulled up into a pleat along the forehead and forms the hood (*temeder*) over the eyes. There remains a long loop of the dependent broad portion held by the narrow fastening band: this hangs loosely from over the right ear, behind which it is passed, over to the left ear, behind which the end is brought and passed, under the narrow fastening band running round the head. The lower part (*imawal*) of the veil thus falls below the wearer's chin in a loop, both ends being under the narrow band that holds them in place. The centre of the strip is taken and placed on the bridge of the nose, and all the slack is pulled in from the two points over the ears. The imawal should now hang from the bridge of the nose over the mouth and chin without touching them, and the upper edge from the nose to the lobes of the ears should be nearly horizontal. Thus worn, the veil leaves a slit some $\frac{1}{2}$ to 1 inch wide in front of the eyes, which,

with a small part of the nose, are all that is ever seen of a Targui's face. It follows, of course, that the wearer must raise his head in order to see a distant object.

As has already been noted, women are not veiled, despite Koranic law.

Men wear loose trousers like those of the Arabs, but reaching rather nearer the ankle: these are just big enough at the lower ends for the feet to pass through. A sleeveless cotton shirt (*gandoura*) usually completes the costume. This is of white or blue cloth and comes from Kano, Bida, or Zinder. Round it is clasped a leather belt with two shoulder-straps, which often serves as an ammunition pouch. The *imghad* (see below) wear a rough goatskin cloak, and the nobles sometimes wear an embroidered garment over the *gandoura*. Ornamented leather sandals, which tend to deform the feet somewhat, are fastened by thongs which pass between the big toes and the next toes. Women wear a long strip of cloth (*guinée*) wound round the whole body. This is sometimes sufficiently voluminous to cover the lower half of the face, but sometimes so much scantier as to leave the breasts bare. Some women also wear trousers and a short sleeveless blouse. Children have little or no clothing. There is no tattooing, but many men wear bracelets of polished stone, and women silver bracelets and other ornaments. The women also commonly blue their lips and eyelids with antimony.

Arms and Armour. The average Tuareg warrior carries a rifle and a 6-foot wooden or metal lance with an iron head. On his right side he wears a two-edged sabre with a cruciform hilt, and on his left forearm, fixed there by a leather strap, a dagger. The great rectangular shield of ornamented oryx-skin is now obsolescent; so also are bows and arrows.

Social Organization. There are five main groups of Tuareg tribes in French West Africa, the Ajjer of Ghat-Ghadames, the Oulimiden of the Timbuktu district, the Ifoghas of the Sudanese Adrar, the Kel Aïr of Aïr, and the Kel Oui of the plains of Ténéré and Manga. Members of the last two groups have much negro blood in their veins. The various tribes are differentiated according to the purity of their blood and according to the number of camels they possess. In this way a complicated system of rank has been evolved. Within each tribe up to five castes may be distinguished: the *imajoren* (sing. *imochar*) or nobles; the *imghad* (sing. *imghid*), feudatories to the *imajoren*; the mallams, who are priests, magistrates, and teachers; the *bellah*, serfs and herdsmen; and the *grassas* (artisans).

The distinction between the imajoren and the imghad is a very ancient one. The latter originally belonged to various different tribes, and they are all descended from families or individuals who had been taken prisoners in war, later set free, but for ever branded with this disgrace. Their social position was consequently one of dependence on the superior tribe to which they had formerly belonged. Originally the superior tribe represented the real Tuareg race, while the oldest imghad belonged to other peoples, some of whom had been conquered perhaps as early as the neolithic period. In course of time a complete national fusion has taken place, and there is now a distinction between classes or castes instead of between races. Also progressively more imajoren have become imghad. Only the free superior tribes are allowed to wage war and to make peace. If an imghad tribe takes prisoners of war, these become the property of the imghad's overlords and can only be freed by them. When this happens, the prisoners sink to the level of their imghad captors.

Unlike the bellah, the imghad are collectively and not individually dependent, and they own allegiance to a tribe and not to a person. The fact of imghad dependence is shown by the fact that an imochar administers their justice. The most important duty of the imghad is to take charge of their masters' camels for long periods and to go on trade journeys with the animals. In this way they act as agents for their superiors, but they always do so collectively. The young of the camels are divided in equal shares, but animals that die have to be replaced. On their side, the superiors protect their dependants in a feudal manner.

The imghad are thus the more active members of the community, and the imajoren have suffered considerable financial losses through the decline of the caravan trade, which was formerly their chief source of income. On the other hand, the economic position of the imghad is improving, so that the social barrier is beginning to break down.

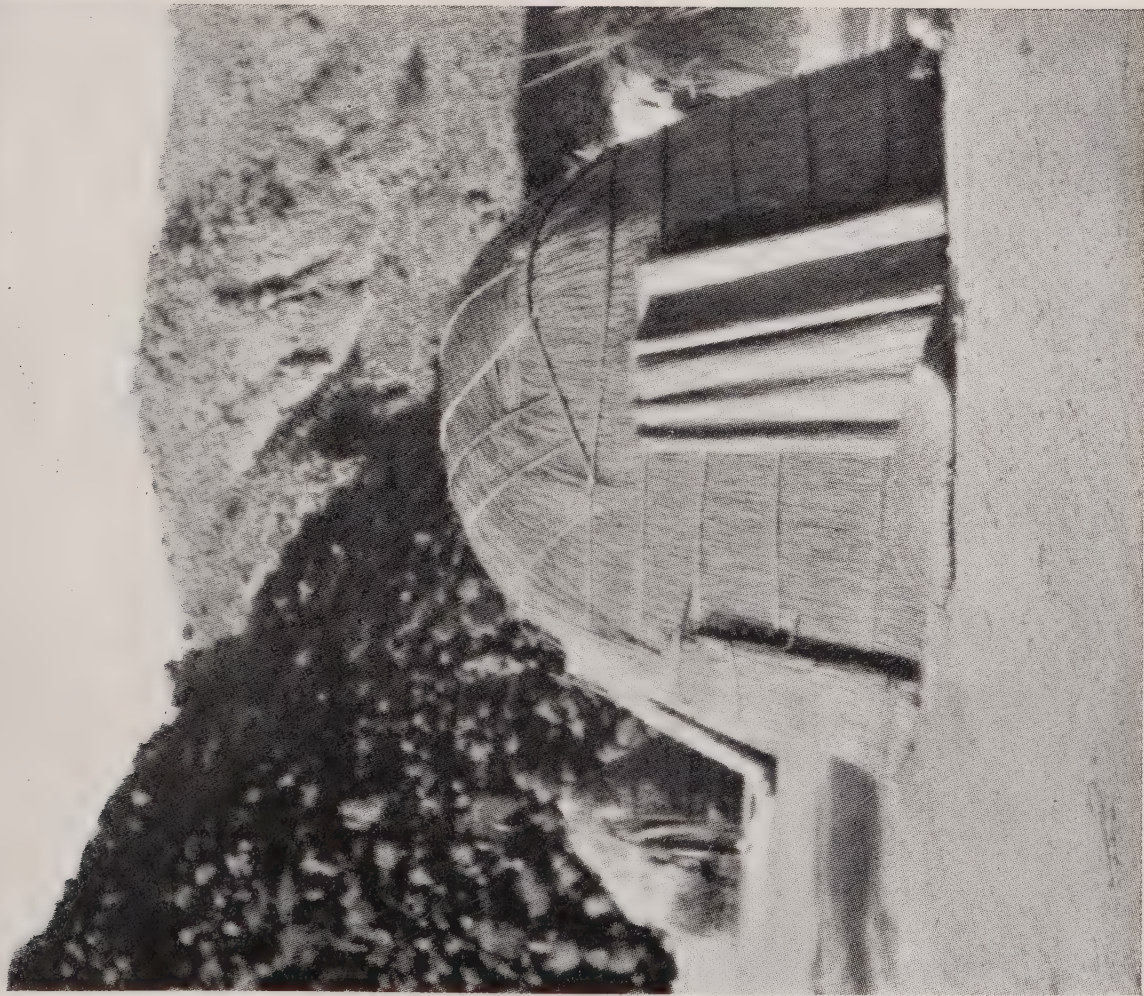
Each tribe is governed by a *Jemâa* (tribal council) presided over by a chief. This chief may be elected by the nobles or be appointed by the French, but, in either case, his authority is not very great. Indeed, the whole organization of the Tuareg is loose. Descent is very frequently matrilineal, although among the more northerly tribes it has only been so for the last six or seven generations. No man has more than one wife. After his death a dead man's property is divided between his children.

The Tuareg are nominally Moslem, but in fact they are not very highly Islamized. In the past, the mountains and the desert have united to keep them from more than superficial contacts with the main streams of Arab influence.

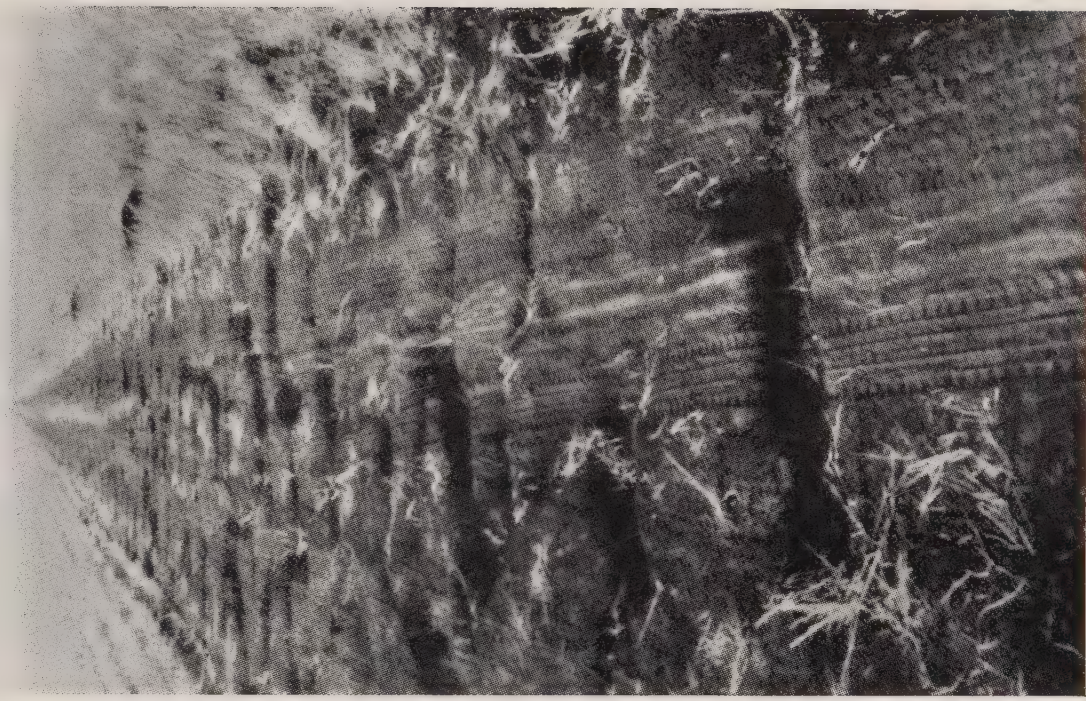
Mode of Life. In former days they combined nomadic pastoralism with pillage and raiding, but, particularly since the revolt of 1917, their warlike activities have been severely checked by the French. To-day the Tuareg are mostly owners of flocks and herds of camels, sheep, goats, and a small number of cattle. Especial value is attached to the camel, although this beast, the last to be introduced into this part of Africa, was probably unknown before the seventh century A.D. It is, of course, better suited to the climatic and other physical conditions than any other domestic animal. Each tribe has a fixed and definite grazing area. Food includes milk, butter, cheese, dates, millet, and couscous; but, like most other pastoralists, the Tuareg rarely kill animals for meat. There are taboos on the eating of fish, birds, eggs, and sand lizards. A few Tuareg are settled agriculturalists.

The activities of the imajoren and imghad women are confined to housework, to pasturing sheep and goats, and to the preparation of food. Work in the garden is left to the bellah, male and female. The women take their meals with the men. Young girls devote much time to poetry, dancing, and singing.

Tents, Huts, and Houses. Most of the Tuareg live in skin tents, which can easily be transported. The agriculturalists live in huts (Plate 101) made of straw or matting on a framework of wood. These, however, differ considerably from the normal African types: they have no vertical wall of reeds or grass and a separate conical roof, but they are built in one piece as a parabolic dome. In Aïr there are also some permanent houses of stone and cement (Vol. I, Plate 11). They are rectangular and seldom consist of more than two rooms, a larger one with two or three outer doors and an inner one with one door in the partition wall and no outer doors. Their internal dimensions may be up to 29 ft. by 14 ft. by 12 ft., though most of them are rather smaller. The doorways are rarely higher than 4 feet with a breadth of 3 ft. 6 in. In some cases the door openings are recessed on the inner side to take a movable wooden door some 10 inches broader and taller than the opening itself. The recess is continued for a sufficient space laterally to allow the door to be pushed to one side without taking up room space. Other houses have wooden doors swinging from stone sockets in the threshold and the lintel. Inside



101. *Tuareg huts*



102. *Track near Agades cracked by heat*



103. *Ansongo*

the walls there are niches and shelves for storage. The roofs are thatched with the leaves of the doum palm, the same tree furnishing wood for rafters and doors. There is often a parapet of dried mud with four or six pinnacles. No new houses have been built for many years, and many old ones are now without inhabitants.

Domestic containers and utensils are of rough pottery or of wood. Ironwork is confined to the repair of fire-arms and to the making of knives and lances. Hides are tanned for the manufacture of saddles and bags. There is no spinning or weaving, but straw is plaited into mats and baskets.

On the whole, life for the Tuareg is hard. The semi-desert provides rather poor pasture, and opportunities for the accumulation of wealth in any form are few.

7. HISTORY

Native History before the French Occupation

The Tuareg and the Sultanate of Agades. In the history of Niger the Tuareg have played a part out of all proportion to their numbers. A race of uncertain origin (p. 364), they came into Aïr about the eleventh century. These Tuareg partly absorbed the Hausa who were occupying Aïr before their immigration, and partly drove them southward to the positions which they now occupy south of a line running roughly from Tahoua to Zinder. Intertribal strife has been characteristic, but the tribes have always recognized their mutual kinship, and have combined through the centuries for certain purposes, such as opposition to common enemies.

Tuareg tradition says that all their tribes, being unable to agree on the choice of a Sultan, united in a deputation to the Commander of the Faithful at Constantinople, with the request that he would give them a ruler. After years of delay, Yusuf, the son of the Commander by a slave woman, was nominated, took up his duties in Aïr, and founded Agades as his capital. The date of the institution of the Sultanate is put by the most imaginative among them at about A.D. 900, Agades being founded about 920, but by others, with greater plausibility, some 500 years later. In either case, if there is any truth in the legend, it must have been the son of a Byzantine Christian Emperor who was designated, for Constantinople did not fall to the Turks till 1453. The whole story may have a basis of truth, but chiefly deserves mention as being strongly held by the Tuareg

themselves. All that can be said with certainty is that at the beginning of the fifteenth century the line of Sultans which has lasted to our own day had begun. By the middle of the same century Agades had become the capital, displacing Takedda (Teguidda-n-Adrar) as the junction of caravan routes, and by the end of it the name Takedda had disappeared from the chronicles. In 1516 Agades was visited by Leo Africanus, who described it as a comparatively new town.

At first, this Sultan received the allegiance of all the Tuareg tribes, including at least part of the Oulimiden, but he more and more tended to become the Sultan, not of the Tuareg, but of Agades. It was his economic role which preserved even this limited authority for him, for it was he who arranged the passage of the caravans from Tripolitania, and organized and protected, as far as possible, the annual salt caravans (*azalai*) to Bilma, taking tolls from all who passed through. Amid the constant strife of the Tuareg, the Sultan with his historic prestige was the only element of permanent stability. The sole occasion on which he exercised public authority was in October of each year before the departure of the *azalai* to Bilma. Then he presided over the great meeting of the tribes and settled their differences. For one week he held the reality of power as well as its outward appearance; but, with the dispersal of the notables on their diverse roads, he resumed his practical insignificance for another year.

Subject nominally to the Sultan, each tribe or confederation of tribes of the Tuareg had its own head, whether elected or hereditary. The Kel Oui confederation, to which many tribes of lesser importance adhered, elected its own chief, the Anastafidet. At first he was elected for a period of three years, but it became customary to reappoint a satisfactory Anastafidet when his term of office expired. His principal duties were to represent the confederation at Agades, and to arrange for the freedom of transit of caravans to the south. Although he doubtless received presents, he had no official salary, and he was assisted by various Kel Oui officials both at Agades and throughout the country. With the exception of the Kel Oui, no Tuareg tribes formed a permanent confederation. As occasion required, however, the lesser tribes would adhere to the greater, the principal of whom was the Kel Gress; but each chief conducted his business with the sultan or with his brother chief independently. It was the strong though loosely knit organization of the Kel Oui that enabled them to gain the Sultan's support in their eternal struggle with the Kel Gress, whom they finally expelled from Aïr.

In 1515 Agades was captured by the Songhaï Emperor Mohammed I, and it remained part of the Songhaï dominions until their dissolution by El Mansur in 1591.

The Hausa, Songhaï, and Bornu Empires. By the middle of the fifteenth century the Hausa farther south, hitherto divided into small independent states, had fallen under the domination of the 'Kantas' or Kings of Kebbi, a country lying to the south-west of Sokoto. About 1500 the Kantas were masters of Katsina, Kano, Zaria, Gober, and Zamfara, and extended their influence to Aïr. This roused the fear of the Bornu Sultan, Maï Ali (1472-1504), who had just moved south and established his capital at Gassaro, about 50 miles west of Lake Chad. Maï Ali attacked Kebbi, but was repulsed and forced to flee. The Kanta, however, was killed by rebels from Katsina as he was returning to his capital. The next Kanta made an alliance with Mohammed I, who helped him to reduce Katsina. In return the Songhaï Emperor was assisted in the capture of Agades. The Kanta broke this alliance in 1517, and succeeded in repulsing the army which Mohammed sent against him, thus re-establishing his authority over the Hausa. At the end of the century, however, under the leadership of the Kings of Gober and Zamfara, the Hausa threw off the yoke of Kebbi.

Agades was a flourishing mart on the caravan routes between Gao and Tunis and Cairo, and its conquest in 1515 enhanced rather than diminished its prosperity. This was partly due to the planting of Songhaï colonies at In Gall and Agades, which kept within reasonable bounds the raiding propensities of the Tuareg. The Songhaï yoke was light, though during the whole of the sixteenth century tribute was regularly exacted and paid. Later, the vassal declined with the suzerain, but Agades itself appears never to have been occupied by the Moors. During the seventeenth century the caravan route to Gao fell into entire disuse, although communication between Agades and Katsina and the south was still maintained.

The downfall of the Songhaï Empire was the signal for the rise of that of Bornu. Growing at considerable speed, the latter attained its zenith under Idriss III (1571-1603). Besides embracing much of what is now Nigeria and French Equatorial Africa, it extended also to Damagarim and Aïr. Order was kept throughout his dominions, learning and the arts were encouraged, and a prosperous trade sprang up with Tripoli and Egypt. The suzerainty over Aïr was shortlived, for in 1645 the Bornu capital was besieged by the Tuareg. In 1685 or thereabouts a Bornu expedition against Agades was forced

by famine to withdraw north-east through the desert. Abandoned by its Sultan, the Bornu army was surprised and defeated by the Tuareg at Achegour, 65 miles north of Fachi. From then onwards the Tuareg exercised a paramount influence in this region, controlling the salt trade and raiding the country at will. Their suzerainty was acknowledged by a light tribute, not always regularly paid, and until 1870 each newly elected Sultan of Bilma went to Agades to do homage. The sending of presents continued until the French occupation.

During the sixteenth and seventeenth centuries the Oulimiden Tuareg, coming originally from Adrar, spread south towards the Niger, and for some time fell under the domination of Morocco. The Moors' hold on Timbuktu gradually relaxed from the middle of the seventeenth century, and the Oulimiden became the terror of the country north and east of Timbuktu. In 1770 they advanced south and captured Gao, subsequently spreading along both banks of the Niger.

About the same time the constant feuds previously mentioned led to the wholesale emigration of the Kel Gress from the mountainous country southwards to the neighbourhood of Madaoua.

Notwithstanding continuous raids by Tuareg, the Bornu Empire maintained its hold on the southern part of what is now Niger until the Toucouleur attack of 1808. This was made by Osman dan Fodio, the founder of the nineteenth-century power of Sokoto, who defeated Maï Ahmed near Gassaro in that year. All was not lost, however, for an influential chief, named Mohammed el Amine el Kanémi, rallied the troops of Bornu and, aided by the Ouled Sliman Arabs, pushed back the Toucouleur. From that time forward Maï Ahmed was a puppet in the hands of El Kanémi. In 1846 the latter's son Omar usurped the title as well as the reality of power, and proclaimed himself Sultan of Bornu. He moved his capital to Kukawa, and there his dynasty remained till it was overthrown by Rabah more than forty years later.

Nineteenth-century Explorers

Many explorers passed through what is now Niger. Among them were Denham, Oudney, Clapperton, and, greatest of all, Barth. In 1870 Dr. Gustav Nachtigal came to try and create German trade with the central Sudan. Arriving from Murzouk, he crossed Tibesti and Bornu, circled Lake Chad, and reached Khartoum in 1874.

Subsequent journeys were made by French officers with the direct object of extending the French dominions.

The French Occupation

The Say-Baroua Line. The General Act of the Berlin Conference (26 February 1885) recognized the upper valley of the Niger as being within the sphere of French influence, and an Anglo-French Convention of 5 August 1890 laid down a line from Say on the Niger to Baroua on Lake Chad as a rough boundary line between France and Great Britain, leaving Sokoto to the latter power. This line was not wholly satisfactory to either party, and was revised by the Convention of 1898 and again by the *Entente Cordiale* agreement of 1904. These agreements assured France that there would be no opposition from Great Britain to the realization of the project of creating a solid block of French territory from the Mediterranean to the Congo and from the Atlantic to the boundaries of the Anglo-Egyptian Sudan.

The country between the Niger and Lake Chad was still largely unknown, and Captain Monteil was charged with a special mission of exploration. He started from Ségou, and in January 1891 he made treaties of protection with Dori and Liptougou. Crossing the Niger at Say, he then turned south-east into what was undoubtedly the British sphere of influence. He visited Sokoto and Kano and penetrated Bornu. After a prolonged stay in the neighbourhood of Lake Chad, he went north through N'Guigmi, Bilma, and Murzouk, arriving at Tripoli in December 1892.

The occupation of Timbuktu in 1894 gave France the opportunity of extending her empire east of the Niger. Say was taken by the French in 1897, and a small mission under the command of Captain Cazemajou left there in the December of that year. Cazemajou's instructions were to reconnoitre the Say-Baroua line and to discover the attitude of the natives along it. Proceeding by Tahoua, he reached Zinder on 11 April 1898, and was well received by the Sultan. At an interview on 5 May, however, Cazemajou and his European interpreter were treacherously seized and afterwards killed. A Senegalese sergeant, Samba Taraoré, and a tirailleur, who had gone to the market, were captured. A corporal, Koubi Keïta, with the remaining thirteen tirailleurs defended the house where the mission had lodged, killing 200 of the enemy. Negotiations followed. While they were in progress, the native prisoners were released, and the tirailleurs invited to enter the Sultan's service. This offer was indignantly refused, fighting was renewed, and the brave Koubi Keïta was killed. Though persistently attacked, Samba Taraoré

ultimately succeeded in drawing off his little force, and returned to Say on 8 July. Of the original sixteen Senegalese seven had been killed and the remaining nine were wounded. This gallant little episode amply justified the confidence that the French had always reposed in their native troops. Not all were so reliable, as the following incident showed.

Mediterranean-Atlantic-Congo. After this treachery, a strong expedition, consisting of 600 tirailleurs, 100 spahis, and a mountain gun, with some 2,000 carriers, left Gaya on 18 February 1899. Captain Voulet was in command with Lieutenant Chanoine as second. Voulet's orders were to inflict punishment on Zinder, to enter into relations with the chiefs as far east as Lake Chad, and to join with two other expeditions. One of these, under Fernand Foureau and Commandant Amedée Lamy, came from Algeria, and the other, under Louis Gentil, from French Equatorial Africa. Voulet proceeded slowly and by July had only arrived at Dankori near Tessaoua. Meanwhile, reports having reached French headquarters of the excesses committed by the expedition and of the pillage permitted by its commanders, Lieutenant-Colonel Klobb was ordered to overtake the column and to relieve Voulet of his command. At his approach on 14 July Voulet, who was with Chanoine and a body of irregulars, gave the order to fire. Klobb was killed, and his second-in-command, Meynier, and several of the escort were wounded. On hearing of the murder, in which it had taken no part, the nearest detachment of regular tirailleurs decided to throw off the authority of Voulet and Chanoine. The men proposed to put themselves under the next senior officer, Lieutenant Pallier, who was encamped with the main body some miles away. Next morning they proceeded to carry out their design, and marched off under their non-commissioned officers. Voulet attempted to stop them with promises and threats, but they stated that they no longer recognized his authority, and, when he persisted, they killed him and Chanoine. They then reported the whole affair to Lieutenant Pallier, who attempted to carry on the expedition for a time. On 29 July, after receiving the submission of the Sultan of Tessaoua, he inflicted a sanguinary defeat on the armies of the Sultan of Zinder, the murderer of Cazemajou. This Sultan was killed in a subsequent battle.

As may be imagined, the discipline of the column was not very good, and, though Pallier was a most efficient officer, a number of the tirailleurs flatly refused to continue the eastward march. To

prevent further incidents Pallier determined to march the recalcitrants back to the Niger, and handed over the command of the 270 loyal troops to Lieutenant Joalland. This officer, leaving a garrison at Zinder, reached N'Guigmi at the end of October. He passed round by the north of Lake Chad through Kanem to Goulfeï, where he arrived in December.

The expedition from Algeria under Foureau and Lamy had meanwhile passed through Iferouane and Agades, and the Sultan of Agades had been forced to accept French protection in July 1899. Zinder was reached in November, when the forces under Lamy undertook further pacification in the neighbourhood of Tessaoua. A junction with Joalland's troops was made at Goulfeï in February 1900, but the third force did not reach the others until 21 April. Kousseri was the meeting-place. Gentil's force had been delayed by a renegade slave-dealer and marauder named Rabah,¹ who had kept the districts north and east of Lake Chad in a ferment for twenty years. This meeting was a proud day in the history of France, for the three columns had all made their journeys entirely on French soil. There was no time for rejoicing, however, for Rabah was close at hand, and on the next day the French forces, united under the command of Lamy, defeated and killed him. Though the victory cost the life of the French commander, it opened the way to the peaceful development of the north of French Equatorial Africa. The three missions then separated, Joalland returning to his own territory.

The Third Military Territory. An order of the Governor-General created the Third Military Territory with headquarters at Zinder. Its extent was roughly that of the present colony, except that portion on the right bank of the Niger, and it began its existence on 20 December 1900. The officer commanding was responsible directly to the Governor-General for military matters, but civil matters went through the Governor-General's delegate for Upper Senegal and Middle Niger, who resided at Kayes.

The years from 1900 to the outbreak of the war in 1914 covered a period of penetration into this territory, the setting up of French posts, and pacification of its tribes. At the beginning of this period the Oulimiden and other Tuareg tribes constantly harried the whole of this region, but these warlike peoples were gradually reduced and subjected. The method employed was to send out several small forces, often composed of camel units, and the first bases were

¹ A fuller account of Rabah's activities will be found in the companion volume on French Equatorial Africa (B.R. 515), pp. 235-237.

Zinder and Djadjidouna. Agades, which nominally accepted French protection five years before, was occupied in September 1904, and a post was also established at In Gall. Six months afterwards the withdrawal of French troops was the signal for In Gall to be sacked by the Tuareg, who also massacred the inhabitants of Teguidda-n-Adrar. Although it was occasionally visited by caravans passing through to Iferouane, where the escort was relieved by troops from Algeria, Agades was not permanently occupied till 1906. In the same year also a column was sent into Kaouar, a post was created at Bilma, and a reconnaissance was made as far as Djado. This place had served as a base for the Toubous and the Hoggars for operations against the Tuarèg and for raids on caravans coming to Bilma from the north. In the course of the reconnaissance the column was attacked at Orida, north-west of Djado, by Hoggars armed with modern weapons. In 1909 a courier service was established between In Salah and Zinder, but raids continued. The north-east part of the territory remained insecure, and the Toubou chief, Maï Chaffami, constantly appealed to the French commandant at Bilma to help him maintain authority. Finally, the French decided to occupy Tibesti. Commandant Löffler, having cleared the region of Djado, advanced into Tibesti by Wour and Zouar. After defeating Maï Chaffami's rebellious subjects at Lobogue on 12 February 1914, he reached Bardaï, where he received the submission of the chiefs. Before withdrawing his main forces, he left garrisons at Bardaï and Zouar. Unfortunately these could not be maintained during the next four years.

The Siege of Agades. The War of 1914-1918 brought reduction of staff and rumours of French defeats, no doubt magnified by German propaganda. These had the effect that was to be expected upon the Tuareg and other half-subdued tribes of the Third Military Territory. The revolt of the Oulimiden took place chiefly in the neighbouring colony of French Sudan, but in the course of it Firhoun, their chief, attacked the post of Filingue in 1916. Farther east no attacks had been made; but, even so, at the beginning of August of that year it was thought advisable, in view of the need for economy and for the dispatch of all possible troops to Europe, to evacuate Tibesti. Necessary as this may have been, it was a blow to French prestige.

Graver events farther north had their repercussions in Aïr. In southern Tripolitania there was a revolt of the Senussi towards the end of 1914, and the Italians evacuated their posts of Ghadames,

Ghat, and Murzouk, leaving enough arms, munitions, and stores to equip a small army. During the next two years the Senussi also gave trouble in southern Algeria, where the French were forced to evacuate Djanet (Fort Charlet), and became for the time being masters of the northern Sahara. Well equipped with the spoils of Tripolitania, the Senussi army pushed southwards into Aïr. Commanded by Kaossen, a renegade Targui, it was joined by the Sultan Tegama, who was encouraged by the withdrawal from Tibesti. The Senussi laid siege to the French post at Agades in December 1916, and raided and pillaged the whole country round. On 28 December a French column escorting a caravan from Bilma was cut up with severe losses at Ti-n-Teborak, 14 miles east-north-east of Agades. Its commander, Captain Maffre, escaped to carry the first news of the siege to Zinder. Though the garrison might have cut its way out, to abandon Agades would have been a crowning disaster to French prestige and would have set the whole of Aïr, Kaouar, and Tibesti aflame. Energetic action was taken, and columns were dispatched from Algeria, Timbuktu, and Zinder. The last-named was reinforced by troops from Dakar, brought by sea to Lagos, and carried through Nigeria by railway, lorry, and camel. All available British forces in Nigeria were moved north to support the French, if need should arise. After a siege of three months, Agades was relieved, but the pursuit of the besiegers was difficult in the mountainous country of Aïr. Fighting lasted another twelve months before the rebel bands were finally dispersed. Kaossen fled to Fezzan, where he died, but Tegama was not captured until May 1919.

After the siege of Agades Aïr was rigorously patrolled by camel troops. The French pursued the policy of forcing the Tuareg to go south and to take up a sedentary life round Tanout and Zinder. The tribesmen viewed this prospect with distaste, but some 30,000 of them were induced to leave their hereditary lands. Most of them crossed into Nigeria, where they had no quarrel with the British authorities, and swelled the population of the emirates of Kano and Katsina. This policy of migration was undoubtedly executed with some harshness, and the Tuareg have never since been distinguished for their devotion to France. The absence of inhabitants, moreover, resulted in the neglect of tracks and wells and in the progressive scarcity of camels. In consequence, the caravan routes were more difficult than ever to reopen, when security returned.

In 1922 French policy was reversed, and belated attempts were made to persuade the Tuareg to return to their old homes.

The Colony. After the evacuation of 1916 Tibesti was naturally in a state of disturbance. Raids on caravans were of common occurrence, and punitive expeditions were found necessary for several years after the conclusion of the European war. Although conditions improved, the country was never effectively reoccupied, nor could it be said to have any administration worthy of the name. In 1929, still in this condition, it passed from Niger to French Equatorial Africa, when the present frontier between the two administrations was settled.

With the end of the war, notwithstanding the agelong propensities of the Tuareg and the unsettled state of Tibesti, it was felt that the word 'Military' could be dropped, and the country became 'The Territory of the Niger' under an administrator directly responsible to the Governor-General. The decree of 13 October 1922 gave it full colonial status as 'Niger Colony' under a Lieutenant-Governor (now Governor). The capital continued at Zinder till 1926, when it was transferred to Niamey.

The dissolution of the colony of Upper Volta in 1933 gave to Niger the provinces of Fada and Dori on the right bank of the Niger river, and it then assumed its present outline and area. Though much progress has been made in the last twenty years, it cannot be said that the Tuareg or other tribes of the north have entirely abandoned their predatory habits. Up to 1924 the azalai travelling twice yearly from Agades to Bilma were strongly escorted by regular troops. Since then the direct escort has been abolished, but strong forces of camel troops are still found necessary to ensure the safety of persons and goods in the north of the colony.

In 1908 the autumn azalai comprised 20,000 camels, which brought back to Aïr and Sokoto 1,600 tons of salt and 400 tons of dates. The enormous wastage of camels, the insecurity of the routes, and above all the fact that in Northern Nigeria Roumanian salt had become cheaper than that from the Sahara, caused the autumn caravan of 1924 to shrink to 7,500 camels.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

NIGER comes second to Mauritania in sparseness of population, there being only 3·61 persons per square mile. The bulk of the 1,809,576 inhabitants recorded in 1937 lives along the southern

boundary of the colony, the greatest concentrations being next to the Sokoto province of Nigeria. The total has fluctuated somewhat, and the figures for 1937 were 150,457 less than those for 1931. Whether this was due to more efficient numeration, to the movements of nomads, or to emigration into Nigeria it is impossible to decide.

Natives. The Hausa are the principal native people, but they are not so highly organized politically as their kinsmen across the frontier. They number more than 500,000. There are 310,000 Fulani, almost 300,000 Songhai, and some 180,000 Tuareg. The only other large tribe is the Gourmantché, unique to Niger and numbering 126,000.

In 1936 there were only 42 native citizens.

Europeans. Throughout this vast territory there were in 1937 a mere 444 Europeans, most of whom lived in Niamey or Zinder.

INLAND TOWNS

AGADES (16° 59'; 7° 56' E.). Altitude, 1,719 feet. Population, 3,193. Provincial headquarters. Medical post. Military post. Meteorological station. Landing-ground. Wireless station. Hotel. Garage.

Agades stands on the slope of one of the foothills of the Tarouadji mountains and on the left bank of a kori, the Azzal. This is a tributary of the Irazzer Ou-a-n-Agades, and joins the main ouadi some 35 miles below the town.

History. As Section 7 has stated, the precise date of the foundation of Agades is uncertain; but about the middle of the fifteenth century it became the leading town of Air. At first it was not so much the capital of the region as the seat of an administration set up to deal with the relations between the Tuareg and the travelling merchants; but it later became the residence of the Sultan. It was visited by Leo Africanus in 1516, a year after it had been captured by the Songhai Emperor Mohammed I. The inhabitants still display markedly Songhai characteristics in appearance and language. For the next seventy-five years Agades was an advanced trading post for Gao, but with the Moroccan conquest of 1591 the town began to decline and its inhabitants, estimated at over 30,000, gradually migrated. During the tribal and civil wars of the seventeenth century it changed hands several times, and salt replaced gold as the principal article of commerce. By 1790 Agades was almost deserted. Some revival took place, and, when Barth arrived towards the end of 1850, there were probably 7,000 people living there.

The increase in the caravan trade in the second half of the nineteenth century brought renewed prosperity, and in 1899 Foureau and Lamy saw a flourishing town with a population approaching 10,000. In the autumn of 1904 a French military post was established by Lieutenant Jean. Thirteen years later, as has already been seen, Agades was besieged by Kaossen. The treatment given to the Tuareg after 1917 and the decline of the caravan trade have had severe reactions upon Agades, which has slowly shrunk to its present size.

The Modern Town. Agades contains the Great Mosque, a striking edifice built of stone in 1844, but most of its other buildings are of dried mud. This affords another proof of the Songhaï origin of its inhabitants. The local craftsmen are well known, especially the workers in leather. There is an important military post and also the administrative offices of the huge province of Agades.

Communications. The town is on the Imperial road, being 267 miles from Tessaoua and 307 miles from In Guezzam. It is on the trans-Saharan bus route from Zinder to Algiers. A desert track to the east makes connexion with Fachi (328 miles) and Bilma (429 miles).

BILMA ($18^{\circ} 43'$; $12^{\circ} 56'$ E.). Altitude, 1,171 feet. Population, c. 800. Provincial headquarters. Dispensary. Military post. Meteorological station. Landing-ground. Wireless station.

Bilma resembles many other Saharan villages. It is in the middle of groves of palm-trees, since there is enough water to nourish them, and it is the local military and administrative headquarters. There is some production of dates and of salt, and the camel caravan trade is not yet entirely dead.

Desert tracks run north to Séguédine (128 miles) and Chirfa (206 miles), south to N'Guigmi (342 miles), and west to Fachi (101 miles) and Agades (429 miles).

FADA N'GOURMA ($12^{\circ} 04'$; $0^{\circ} 20'$ E.). Altitude, 961 feet. Population, 2,913. Provincial headquarters. Custom-house. Dispensary and maternity home. Emergency landing-ground. Regional School. Protestant and Roman Catholic missions. Prison. Garage. Weekly market.

To the south of the region of Gourma there is an area of higher ground in the midst of some marshy districts. This higher ground forms the watershed between the tributaries of the Niger on the north and east and those of the Volta and other gulf of Guinea rivers on the south and west. Here has grown the town of Fada N'Gourma.

A native village has long existed, but the modern town is laid out in squares with boulevards and is the headquarters of the province of Fada.

Fada N'Gourma is also a route centre. By intercolonial road it is 137 miles from Ouagadougou, 202 miles from Niamey, and 110 miles from Porga (Dahomey). There are also some native tracks.

MARADI ($13^{\circ} 28'$; $7^{\circ} 08' E.$). Altitude, *c.* 1,080 feet. Population, *c.* 7,000. Provincial headquarters. Custom-house. Medical post. Landing-ground. Regional School. Hotel. Garage. Weekly market.

The scanty waters of the Goulbi m-Maradi give rise to a strip of fertile ground in an otherwise desert region. Maradi is on the right bank of this ouadi, and is a typical Hausa town. The market is important for millet, cattle, and hides.

Maradi is on the intercolonial road, being 155 miles from Birni-n'Konni and 161 miles from Zinder. A track runs up the valley to cross the Nigerian frontier and to reach Katsina, a distance of some 60 miles.

N'GUIGMI ($14^{\circ} 19'$; $13^{\circ} 08' E.$). Altitude, 804 feet. Provincial headquarters. Medical post. Military post. Meteorological station. Emergency landing-ground. Wireless station. Garage.

On a sandy strip at the extreme north-western limit of Lake Chad, N'Guigmi is little more than a military and administrative post. Native inhabitants are few.

By track it is 135 miles from Mainé Soroa and 402 miles from Zinder, 342 miles from Bilma, and 157 miles from Mao (French Equatorial Africa).

NIAMEY ($13^{\circ} 31'$; $2^{\circ} 06' E.$). Altitude, 709 feet. Population, 3,617. Colonial capital. Provincial headquarters. Magistrate's Court. Hospital. Meteorological station. Landing-ground. Wireless station. Hotel. Garage. Agricultural experimental station. Daily market.

In 1926 Niamey replaced Zinder as the capital of the colony. It has not the geographically central position of Zinder, but it is within easy reach of the most densely populated provinces. Furthermore, it is on the left bank of the Niger, that great artery of communications, and more closely connected to Dakar by road and telegraph. Niamey is not a large town and has little recorded history, but the French have made it into a big centre of transport.

The agricultural experimental station does much useful work on livestock, and, in particular, produces large quantities of sera for the prevention of cattle diseases.

Communications. By river Niamey is 230 miles from Ansongo and 189 miles from Gaya. Some details of the steamer services are given on p. 391.

Niamey is at the junction of three intercolonial roads. The first leads north-westwards to Ansongo (220 miles) and Gao (275 miles); the second crosses the Niger by a ferry, goes southwards to Say (37 miles), and then turns westward to Fada N'Gourma (202 miles) and Ouagadougou (339 miles); and the third pursues a generally eastwards course to Birni-n'Konni (269 miles), Maradi (424 miles), and Zinder (585 miles), with a branch from Dosso (87 miles) to Gaya (175 miles). Niamey is the southern terminus of the trans-Saharan bus service (p. 224) to Gao and Colomb Béchar. Of the two more local services one provides a weekly connexion with Birni-n'Konni and Zinder and the other (p. 90) with Malanville and Tchaourou (Dahomey).

Three air lines normally serve the town: the Régie Air Afrique route from Algiers and Aoulef to Lamy and Antananarivo, the Sabena route from Brussels and Algiers to Lamy and Elisabethville, and the Aéromaritime route to Cotonou.

SAY ($13^{\circ} 07'$; $2^{\circ} 19' E.$). Altitude, 656 feet. Population, 1,703.

District headquarters. Hospital. Emergency landing-ground.

Agricultural experimental station. Weekly market.

Say is on the right bank of the Niger at one of the places where that river is most easily crossed by ferry. It will be remembered that Captain Monteil crossed here in 1891 and that the little town itself was taken by the French in 1897. Most of its inhabitants are Moslems, who hold an annual festival every March.

At the present time Say is chiefly noteworthy for being the centre for the treatment of sleeping-sickness and of leprosy.

Communications. During the flood season there is a fortnightly boat service upstream to Niamey (28 miles) and downstream to Gaya (161 miles).

Say is on the intercolonial road from Niamey (37 miles) to Fada N'Gourma (165 miles). From the opposite bank of the Niger a colonial road of 24 miles in length provides a connexion with the intercolonial road between Niamey and Dosso.

TAHOUA ($14^{\circ} 56'$; $5^{\circ} 17' \text{ E.}$). Altitude, 1,230 feet. Population, c. 9,000. Provincial headquarters. Medical post and maternity home. Military post. Wireless station. Agricultural experimental station.

Tahoua is on a small plain set among low hills. Ethnographically, it is in a zone of transition between nomadic and sedentary peoples, the Tuareg and the Hausa; and it has, therefore, acquired commercial importance as an entrepôt. A fair track connects Tahoua southwards with Birni-n'Konni (119 miles), and a poorer one winds north-eastwards to In Gall (198 miles) and Agades (287 miles).

ZINDER ($13^{\circ} 46'$; $8^{\circ} 59' \text{ E.}$). Altitude, 1,676 feet. Population, 11,415, including 160 Europeans. Provincial headquarters. Medical post. Military post and barracks. Police station. Meteorological station. Landing-ground. Wireless station. Protestant mission. Hotel. Garage. Daily market.

Zinder has been in French hands since November 1899, and from 1900 to 1926 it was the capital of the colony. It occupies a little plateau between two ouadis and is composed of three parts: the main town, the village of Birni, and the village of Zengou (Plate 104). The red and yellow stone houses of Zinder proper are dominated by the military post, still the headquarters of the Military Territory of the Niger. Birni, a little to the south-east, is the former capital of the Sultan of Zinder and the actual residence of the modern Sultan of Damagarim. Its high earthen walls are partly in ruins, and it gives the impression of sleeping peacefully in the sun, dreaming of past glories. North of the main town, Zengou presents a contrast. It is the scene of the market, and is a place of bustle and noise. Native and European traders deal in cattle, hides, horses, gum, the products of local craftsmen, and many other things.

The whole town is surrounded by scrub, and the local rocks are noted for the peculiar shapes which result from aeolian erosion.

The native inhabitants are mainly Hausa, but there are some Fulani and Béri-Béri.

Communications. Zinder is the true terminus of the Imperial road that goes westwards to Tessaoua (85 miles) and then northwards to Agades (352 miles), In Guezzam (659 miles), and Laghouat (1,695 miles). It is also the terminus of the intercolonial road to Tessaoua, Maradi (161 miles), Birni-n'Konni (316 miles), and Niamey (585 miles). A track leads eastwards to Mainé Soroa (267 miles) and N'Guigmi (402 miles). Zinder is on the fortnightly trans-Saharan

bus route (p. 393) from Algiers and Agades to Kano and Lamy. There is also a weekly bus service to Niamey.

By air it is normally served by the Régie Air Afrique from Algiers to Antananarivo and by Sabena from Brussels to Elisabethville.

9. ADMINISTRATION

A DECREE of 13 October 1922 transformed the Territory of the Niger into the colony of the same name. It was placed under the



FIG. 46. Niger: Administrative Divisions

administration of a Lieutenant-Governor (now Governor), and since that date it has formed one of the component colonies of the Federation. Not unnaturally, it is not yet highly developed politically. Towns are small, and there are no communes or Chambers of Commerce.

Councils

The colony has no representation on the Supreme Council of the French Colonial Empire.



104. Zinder : Zengou



105. *Native fishermen near Gao*



106. *Salt-making*

The Executive Council is smaller than those in the more settled colonies and contains no elective element. Its composition was laid down by a decree of 22 March 1927 and is as follows: the Governor as President, the Chief Financial Officer, the Magistrate of Niamey, the officer commanding the troops, and two unofficial members. One of these last is a citizen and the other a subject, and both must speak French. They are appointed by the Governor-General, on the recommendation of the Governor, for a term of two years, but are eligible for reappointment indefinitely. It is laid down that, if there should be no suitable persons in the colony who fulfil the conditions, the council is validly constituted without them.

The Standing Committee consists of the Governor, the Magistrate, the citizen, and the subject.

Territorial Divisions

The colony is divided into fourteen provinces (Fig. 46), some of which are further divided into districts. Many of these provinces are of vast size, Agades being more than one and a half times the area of the British Isles, and their names are as follows.

<i>Provinces</i>	<i>Headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Agades . . .	Agades . . .	138,327	..
Bilma . . .	Bilma . . .	130,876	..
Dori . . .	Dori . . .	15,052	..
Dosso . . .	Dosso . . .	12,119	Dogondoutchi, Gaya
Fada . . .	Fada N'Gourma . . .	19,096	Diapaga, Pama
Konni . . .	Birni-n'Konni . . .	8,065	Madaoua
Manga . . .	Gouré . . .	40,955	Mainé Soroa
Maradi . . .	Maradi . . .	10,932	Tessaoua
N'Guigmi . . .	N'Guigmi . . .	31,379	..
Niamey . . .	Niamey . . .	17,961	Filingue, Say
Tahoua . . .	Tahoua . . .	42,795	..
Tanout . . .	Tanout . . .	15,419	..
Tillabéry . . .	Tillabéry . . .	8,837	Téra
Zinder . . .	Zinder . . .	10,120	Magaria

Courts of Law

There is no Court of Assize, and criminals are sent for trial to Bamako in French Sudan. There is a Magistrate's Court at Niamey.

Native Organization

Several of the historic sultanates still exist, and their heads, whether or not recognized by the Government, enjoy great authority over their subjects. The sultans, however, are seldom given administrative duties, but their advice is frequently sought and their

influence enlisted. In 1924, for example, the Sultan of Zinder was a member of the Executive Council and the Sultan of Agades received a grant of 6,000 francs. Otherwise the normal system of chiefs is in existence.

Land Tenure

By the end of 1937 no titles had been granted with the full state guarantee, and only 17 acres were covered by the process of Confirmation of Native Land Rights.

Labour

In 1935 there were 351,600 persons on the forced labour rolls, and 2,387,000 man-days were worked.

For private employers no labourers were working under written contracts in 1936, while 25,100 were working without contract. In the public service 400 were working on written contracts and 5,700 without.

Agriculture

Agricultural services are on a very small scale. Native Provident Societies have been set up in every province, but, owing to the nature of the country and to the nomadic habits of many of its inhabitants, they do not play a very great part in the life of the colony. In 1937 their total receipts were 1,782,000 francs (£10,933) and their expenses 1,406,000 francs (£8,626). Of the latter 471,000 francs (£2,890) were spent in the purchase of seeds for distribution.

Mining

Up to the end of 1937 only one prospecting licence had been taken out.

Education

In 1938 the educational staff consisted of 21 European teachers and 43 native. The numbers of schools and pupils were as follows:

				<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total pupils</i>
<i>Primary</i>							
Village schools	.	.	.	19	887	58	945
Regional schools	.	.	.	5	560	90	650
<i>Higher Primary</i>	.	.	.	1	46	0	46
<i>Technical</i>	.	.	.	1	41	0	41
Totals	.	.	.	26	1,534	148	1,682

All the above are government schools. The only private education is given by some 1,600 Moslem schools, which impart rudimentary knowledge to about 8,500 pupils.

Health

In 1937 there were 17 European medical officers and 5 European dispensers and nurses. The native staff comprised 9 auxiliary doctors, 3 dispensers, 13 midwives, 92 nurses, and 42 sanitary inspectors and others. There was 1 major hospital and there were 23 subsidiary hospitals, 8 maternity centres, and 76 medical posts. Between them they provided 10 beds for Europeans and 322 for natives.

11. MINERALS

SALINE alluvial soils exist at Tedjidda-n-Tesemt, at Fachi, at Bilma, and along the Dallol Foga. Salt is extracted by lixiviation (Plate 106) and evaporation; but, as it contains from 6 to 30 per cent. of sulphate of soda, it is always impure. It used to be carried to Nigeria, but the trade has now decayed, because with cheaper communications salt can be more economically imported from overseas. It is thought that Air and Kaouar may contain mineral deposits, but no survey of the colony has yet been made, and its mineral wealth is an unknown quantity. Alkaline springs are found at Igouloulouf (60 miles south-east of Iferouane) and Tafedeck (30 miles north of Agades). They are reputed by the Tuareg to cure rheumatism and other ailments.

12. AGRICULTURE

MOST of the colony is unproductive. The lands on the right bank of the Niger in the south-west and a strip, nowhere more than 80 miles wide, in the south are in the millet zone, and an area of almost equal size is reckoned to be in the sub-desert zone; but all the rest is desert. Agriculture, therefore, is mainly confined to the immediate vicinity of the river, whose floods supplement the scanty rainfall. Over most of the colony the natives find it hard to supply their own needs, and, in consequence, there are few crops for sale or export. Livestock offer the only opportunity for substantial wealth.

Crops

Millets. Millet, being the staple article of diet, is by far the most important crop. It does best in a climate of contrasts, requiring a

little rain in the early stages of growth and, since the seeds are liable to attack by mould, a dry atmosphere for ripening. There are two main groups of varieties, one that takes 3 months to ripen and one that takes 5 or 6 months. The commonest species of the former group is bulrush or spiked millet (*Pennisetum* spp.), so named because of the shape of its head and of its seeds. These may be either smooth or awned, the latter being more popular as its bristles discourage the attacks of birds. The chief representatives of the slow-maturing groups are species of *Sorghum* or Guinea corn. There are four main types of this: grass sorghum, broom corn, sweet sorghum, and grain sorghum. The unripe heads of the broom corn are used as brooms, but the names of the others are self-explanatory. The principal sort of grain sorghum is *S. guineense*, the true Guinea corn, which provides food, whether as grain, as flour, or as bran. All sorghums contain prussic acid, and, for this reason, cattle are muzzled when there is danger of their eating unripe grain. Some millet stalks are as much as 12 feet long and are used for circular bands of hut roofs. It is estimated that the colony produces about one-third of the total millet of the Federation.

Hungry Rice. Most of the hungry rice in Niger is *Digitaria iburua*, conditions being too dry for the *D. exilis* so common farther west. The Fulani word *fonio* is sometimes used for it by Europeans.

Other Crops. Cultivated rice is grown near the Niger. Cow-peas are important and are often interplanted with millet. Where the rainfall permits, manioc, maize, wheat, barley, ground-nuts, onions, pimento, cotton, and tobacco are grown. In January 1938, 227 tons of ground-nuts were exported by river from Say to Malanville, and in that and other months there was also a small export of cotton. Sisal and the silk-cotton tree are grown in Niamey province. Various types of acacias are common, and *Acacia raddiana*, a desert shrub, gives good fodder to camels and sheep. Dates are grown in the oases of the north.

Livestock

Cattle. The chief breeds of cattle are a long-horned humpless type found near Lake Chad and three types of zebu. These are (i) the Arab zebu, common east of Gouré and in the north, which are used for agriculture or as beasts of burden; (ii) the Nigerian zebu of the Fulani, found in the river areas, which are short-horned, small, and strong; and (iii) the *borroro* zebu, largest of

them all, which have long spiral horns and very large dewlaps. In 1938 official returns showed 760,000 head of cattle.

Sheep and Goats. Sheep and goats together number about 2,700,000. Each tribe has its own distinguishing breed of sheep. The Tuareg, for example, keep a short-haired type known as *ara-ara*, the Hausa a smaller, short-haired type called *bali-bali*, the Fulani an intermediate type, the *Louda*, and the Songhaï a type named Goundam. This last is particularly noted for its excellent wool. Goats are very common, especially among the Hausa.

Horses and Donkeys. Most of the 63,000 horses in the colony are a cross between the Barbary horse of Morocco and the Dongola horse of Egypt. They are not very large by European standards. A smaller breed, the Djerma, is kept in the south-west. Donkeys probably number some 160,000, and are chiefly kept by townsmen.

Camels. Camels are less numerous than might be expected, there probably not being more than 50,000 of them altogether. They are, of course, exceedingly useful. There are four main types: the small camel of the north, the larger breed of the south, the Tuareg camel, and the Tibesti camel. Their differences consist in their degree of adaptation to their environment.

Experimental Stations

The main experimental stations are at Niamey, Say, and Filingue. They deal with a variety of crops, and chiefly aim at helping the native farmer to increase the range of his products. Special stations and nurseries for date palms exist at Djado, at Myrria, and at oases in Agram and Kaouar.

13. COMMERCE AND FINANCE

COMMERCE

The Balance of Trade. Niger plays but little part in the economy of French West Africa. The value of the *Commerce Spécial* in 1938 was 67,109,000 francs, only one-seventieth of that of the whole Federation. Exports greatly exceeded imports both in value and in weight.

Exports. Table V shows the official exports for the years 1935-1937. The ground-nuts come from the districts on the right bank of the river, and the livestock mainly goes to the adjacent country of Nigeria.

TABLE V. *Exports, 1935-1937*

		1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
Shelled ground-nuts. . .	tons	17,258	10,127,296	44,311	33,327,139	21,316	15,697,640
Sheepskins and goatskins . . .	"	320	3,284,326	203	1,384,947	243	633,418
Cattle . . .	head	55,676	5,204,758	53,395	6,916,739	62,808	7,594,065
Sheep . . .	"	292,739	2,824,495	215,198	4,293,870	141,502	5,636,573
Goats . . .	"	..	..	..	..	65,057	1,684,845

Imports. The main imports officially listed are shown in 'Table VI. The cotton cloths are specifically stated to be other than guinées. The quantities of manufactured metal goods and of European food-stuffs, which bulk so large in other colonies, are negligible in Niger.

TABLE VI. *Imports, 1935-1937*

		1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
Cotton cloths . . .	tons	806	12,090,115	1,235	20,379,735	869	22,152,126
Oil fuel . . .	"	500	1,031,853	783	1,470,961	895	2,546,631
Kola nuts . . .	"	282	1,216,806	586	1,346,697	469	1,926,599
Sea-salt and rock-salt . . .	"	469	609,121	672	1,047,658	307	611,200

Internal Trade. There is some internal trade, particularly where the desert tribesmen exchange their dates and the wool and hair of their animals for manufactured goods. Zinder, Gotheye, Sakoiré, and Sansané-Haoussa all have some importance for this.

FINANCE

The budget for 1938 balanced at the modest sum of 33,850,000 francs (£207,669). The official details were as follows:

Revenue

Francs

I. Ordinary Revenue

Direct taxes	17,051,000.00
Customs and excise	1,342,000.00
Posts, telegraphs, &c.	1,831,000.00
Grants and subsidies	11,382,000.00
Revenue from previous financial years	100,000.00

II. Extraordinary Revenue

Sundry receipts	390,119.22
Previous withdrawals from the Reserve Bank	1,753,880.78

TOTAL	33,850,000.00
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*Expenditure**Francs*

I. Ordinary Expenditure	
Debt charges	235,000
Salaries of administrative staffs.	8,643,000
Other administrative expenses	2,749,000
Posts, telegraphs, &c. (salaries and wages)	4,170,000
Posts, telegraphs, &c. (plant and materials)	4,609,000
Public works	2,035,000
Social and economic departments (salaries)	3,160,000
Social and economic departments (other expenditure)	2,260,000
Sundry disbursements (salaries)	65,000
Sundry disbursements (other expenditure)	3,029,000
Secret funds	6,000
Unforeseen expenses	40,000
Police forces for the Sahara	705,000
II. Extraordinary Expenditure	
Extraordinary expenditure	2,144,000
TOTAL	33,850,000

It will be observed that Niger provides its share of the expenditure on the Saharan police force. Otherwise its finances resemble those of any other colony.

14. COMMUNICATIONS

WATERWAYS

THE stretch of the Niger from Ansongo (French Sudan) to Gaya, most of which lies within the colony, is one of the most difficult from the point of view of navigation. It has numerous rapids, notably those at Labbezenga, and from the middle of May to the middle of August traffic is restricted to canoes. When the river is in flood there are two steamer services, one between Ansongo and Niamey and the other between Niamey and Gaya. Boats run every fortnight, but the varying conditions of the river make it impossible for them to adhere to a fixed time-table. Those to and from Gaya are arranged to connect with the bus service from Tchaourou (p. 90). Distances are as follows:

	<i>Miles</i>
Niamey	0
Gotheye	43
Tillabéry	78
Labbezenga	161
Ansongo	230

	Miles
Niamey	0
Say	28
Kirtachi	56
Boumba	124
Gaya	189

ROADS

The colony has 1,192 miles (1,919 km.) of intercolonial roads, 574 miles (924 km.) of Imperial road, and a relatively short length of colonial roads. There are also a number of desert tracks. Fig. 42 shows these, but it must not be allowed to give a false impression. The farther away from the Niger the more inhospitable the country and the worse the tracks. Many of the latter are difficult to find on the ground and present very great obstacles to any sort of vehicular traffic.

Intercolonial

There are two main intercolonial roads: from Ansongo in French Sudan to Zinder, and from Ouagadougou in the Ivory Coast to Porga in Dahomey. They are connected by a third, that from Fada N'Gourma to Niamey, while a fourth runs from Dosso to Gaya.

Itineraries. The first road starts at the border of French Sudan, 62 miles south-east of Ansongo. It follows the left bank of the Niger fairly closely through Tillabéry (78 miles) to Niamey (158 miles). From there it turns slowly eastwards to Dosso (245 miles), and from Dogondoutchi (335 miles) onwards it runs roughly parallel to the frontier of Nigeria. It goes through Birni-n'Konni (427 miles), Madaoua (489 miles), Maradi (582 miles), Tessaoua (658 miles), and Takiéta (703 miles) to reach Zinder (743 miles). At Birni-n'Konni a fair road goes south to Sokoto, 55 miles away; and another one links Takiéta with Kano, a distance of 174 miles.

The second road comes from the Ivory Coast, crossing the border 99 miles east-south-east of Ouagadougou. It runs to Fada N'Gourma (38 miles) and then crosses into Dahomey at 140 miles, 4 miles short of Porga and 430 of Cotonou.

The third runs from Fada N'Gourma north-east to Say (165 miles). It then goes along the right bank of the Niger, effecting a crossing by ferry at Niamey (202 miles).

The fourth starts from Dosso and runs south to Gaya (101 miles), connecting by ferry with the road from Malanville to Cotonou.

Imperial

Itinerary. The Imperial road leaves the intercolonial at Tessaoua. It goes north-east to Gangara (69 miles), and north-west to Aderbisinat (154 miles) and Abalemma (204 miles). Here it enters very difficult country, and the road winds considerably to arrive at Agades (267 miles) and Teguidda-n-Adrar (311 miles). From the latter place it runs mainly north-west to cross the Algerian border at 570 miles. This is 4 miles from In Guezzam, 713 miles from In Salah, and 1,040 miles from Laghouat.

Colonial

The chief colonial road of interest is that which runs east from Zinder by way of Mainé Soroa (267 miles) and N'Guigmi (402 miles) to the border of French Equatorial Africa (441 miles), 118 miles west of Mao.

Bus Services

The Société Algérienne des Transports Tropicaux runs a trans-Saharan service fortnightly from October to May. Buses start from Algiers and travel by way of In Salah, Tamanrasset, and Agades to Zinder, Kano, and Lamy.

Another service provides a weekly connexion between Zinder, Birni-n'Konni, and Niamey. This in turn is arranged to provide a link with the steamer and bus service (p. 90) to Gaya and Tchaourou.

For the trans-Saharan service from Niamey to Colomb Béchar see p. 224.

SIGNALS

Telegraphs

Telegraph lines run alongside all the intercolonial roads except the section from Niamey to Dosso. They also run alongside the following colonial roads: Zinder-N'Guigmi, and Tillabéry-Dori-Djibo (French Sudan). There is also a line across country from Niamey to Dogondoutchi, and another from Filingue to Dosso.

Wireless

There are seven wireless stations, none of high power. Details are given in Table VII. In 1939 radiotelegrams to France cost 9.75 francs (1s. 5d.) a word.

TABLE VII. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Agades . . .	Unknown	1 short	Unknown	Military and military air station.
Bilma . . .	18° 43' N. 12° 56' E.	4 short	0·25 0·1 and unknown	Commercial station with service to south Algeria and the interior.
N'Guigmi . . .	14° 19' N. 13° 08' E.	1 short	Unknown	Military and military air station.
Niamey . . .	13° 31' N. 2° 06' E.	9 short	0·25 0·2 0·125 0·075 and unknown	Commercial, military, and broadcasting station. Interior service. Works with the Benin-Niger network.
Niamey Aéradio and Aérogonio . . .	13° 31' N. 2° 06' E.	2 medium 4 short	0·4 0·2 0·15	Aeronautical and direction-finding station.
Tahoua . . .	14° 54' N. 5° 14' E.	2 short	0·1 0·15	Commercial station. Interior service.
Tanout . . .	14° 54' N. 8° 48' E.	2 short	0·005	Commercial station. Interior service.
Zinder . . .	13° 47' N. 8° 59' E.	7 short	0·25 0·1 0·08	Commercial and broadcasting station. Service to Chad and the interior. Frequency notified for broadcasting.
Zinder Aéradio and Aérogonio . . .	13° 47' N. 8° 58' E.	2 medium 4 short	1·0 0·5 0·1	Aeronautical and direction-finding station.

CHAPTER VIII

SENEGAL AND THE DISTRICT OF DAKAR

I. GENERAL

Senegal. Area: 77,220 square miles. Population (1937): 1,666,374.

Density per square mile: 21.58. Capital: St. Louis.

District of Dakar. Area: 66 square miles. Population (1937): 126,929. Density per square mile: 1,923.16. Headquarters: Dakar.

ALTHOUGH it has fewer inhabitants than most of the other colonies and a lower density of population than Dahomey or the Ivory Coast, Senegal is the most important of all the members of the Federation. Much of the colony is semi-desert, but the remainder is closely settled by some of the most vigorous and progressive peoples of French West Africa. Most of the native citizens are Senegalese, and the fame of the tirailleurs is known in every land. The colony contains some of the earliest French settlements, and its honourable position is attested by the fact that it alone in the Federation sends a direct representative to the Chamber of Deputies at Paris.

The full title of the District of Dakar is the *Circonscription de Dakar et Dépendences*. Besides the town of Dakar it includes Goree, Rufisque, the territory round them, and a few small enclaves inside Senegal. One of these enclaves is at Sebikotane, where is situated the William Ponty School. The District has been a separate political entity since 1924, and its Administrator is not responsible to the Governor of Senegal.

The British colony of the Gambia has all its land frontiers with Senegal.

The greatest distance from north to south in Senegal is 249 miles, and the greatest from west to east is 365 miles. The colony extends from 12° 19' N. to 16° 42' N. and from 17° 20' W. to 11° 20' W. The extreme west of the Cape Verde peninsula is 17° 32' W.

Boundaries. The Atlantic Ocean forms the main western boundary. The only exceptions to this are the frontier with the Gambia and the boundary between Senegal and Dakar. The latter leaves the coast at 14° 49' N. and runs roughly south-south-east until it is 2 miles from Goree bay. There it turns east and afterwards south to strike the bay 1 mile east of Rufisque.

The intercolonial boundary between Senegal and Mauritania begins at $16^{\circ} 04' N.$, $20^{\circ} 31' W.$ It runs east, then north-east, and then south-east to reach the Senegal river 2 miles above St. Louis. The right bank of the river is followed upstream for more than 500 miles until the confluence with the Falémé. This left-bank tributary is pursued, jointly with French Sudan, upstream for 30 miles, but the boundary is east of it for 64 miles, before rejoining it for a further 130 miles. At the end of this last stretch is the meeting-point of French Sudan, Senegal, and French Guinea, and the boundary between the two latter colonies turns west along the foothills of Fouta Jalon. It is fairly straight for its first 60 miles, but later it bends considerably. It crosses the Gambia river 18 miles above Kédougou. It then follows an even more irregular course westwards, but curves north to avoid Youkounkoun. Nine miles north-north-east of this town it turns almost west, and, using one of the headstreams of the Koulountou, keeps this direction as far as $12^{\circ} 40' 30'' N.$, $12^{\circ} 42' 45'' W.$, the north-eastern corner of Portuguese Guinea. From here the international frontier runs due west for 100 miles, ignoring natural features. It then goes south-west for 37 miles and a little north of west for 22 miles before taking a line almost half-way between the Casamance and the Cacheo. It meets the sea at Cape Roxo.

The northern frontier of the Gambia leaves the Atlantic coast at $13^{\circ} 35' 40'' N.$ and runs due east for 72 miles. After this the frontier follows a demarcated line which averages a distance of 6 miles from the right bank of the Gambia river. This continues to be the case as far as a point $22\frac{1}{2}$ miles south-west of Tambacounda. The frontier then turns, crosses the river, and reaches a point 6 miles from the left bank. Owing to the river's meanders this is almost on the bank 6 miles below Diabougou. The right-bank procedure is then followed westwards to $13^{\circ} 21' N.$, $15^{\circ} 46' 30'' W.$ From here the frontier goes due south for $12\frac{1}{4}$ miles to latitude $13^{\circ} 10' N.$ This parallel is followed due west to the Allahine river, which marks the last 15 miles of the frontier.

2. PHYSICAL DESCRIPTION AND GEOLOGY

ALMOST the whole colony lies below the level of 200 feet and, except in the province of Haute Gambie, there is a monotonous regularity of feature. Indeed, the coastal dunes north of Dakar afford some of the

most striking topography. In spite of this, there are few wide horizons, for much of the surface is covered with high bush.

The Coastal Belt

The Cape Verde peninsula protects the south of the coast from the Canary current and there is a marked contrast between the smooth sandy shoreline to its north and the muddy estuaries to its south. From St. Louis to Dakar no rivers reach the sea. Behind the dunes which back the coast is a depression into which, baulked of their normal goal, many small seasonal streams empty themselves. This depression is marshy during and shortly after the rains, and at certain places shallow lakes persist. A wider and more permanent area of swamps lies east of St. Louis. It is formed by distributaries of the Senegal and replenished each year by its flood. Lake Guiers is a large perennial sheet of water at the eastern edge of this marshland.

The Interior Plain

North and east of the railways and south and west of the great curve of the Senegal there is a broad Tertiary plain. This is, in effect, a southward extension of the Sahara, and, like that of Mauritania, its surface is formed of low fixed dunes and shallow clay depressions. The general direction of these features is north-east and south-west. Immediately west of Thiès is a prominent line of hills running north and south. It is formed by an outcrop of Lower Eocene strata dipping eastward, and it is covered by the Forest of Thiès. For most of the year the rather friable top soil is dry, but the depressions become bands of swamp for a few months. Across this general alinement of relief two major valleys run from east to west. One is that of the Ferlo, which flows into Lake Guiers, and the other is that of the Nielloumolé and the Maouré, which are the upper sections of the Sine. The general pattern is edged by the flood plain of the Senegal and its subsidiary channels. The longest of these latter breaks off just below Diorbivol and does not rejoin the main stream until below Podor. It encloses the Île à Morfil, which averages 8 miles wide and is over 300 miles long. Most of the plain is covered with thornland or poor grass-woodland, but much of the land in the extreme south-west is highly cultivated.

The South

In the Casamance Territory relief is slightly more varied. The valleys are flat and annually flooded, but the country between rises

to an average height of some 130 feet. Rocky outcrops frequently break its lateritic surface, and the rise from the valleys is invariably abrupt.

The south-east of the colony is mainly the basin of the Gambia, but some parts are drained to the Falémé. Much land is over 300 feet, and, as the surface rises to the Palaeozoic sandstones and pre-Cambrian quartzites of Fouta Jalon, the valleys of the Gambia and of its tributaries, the Nieri Mango, the Niocolo Koba, and the Koulountou, are proportionately deeper. The side valleys of the first two, indeed, are little more than very narrow gullies. Just east of the 13th meridian steep hills rise on either side of the Gambia itself, and, some 15 miles west of Kédougou, a broken spur strikes north from French Guinea. Upon its heights of over 1,300 feet rise above scarps of 300 or 400 feet, and, although the river now beheads its northern end, it has forced the Gambia to take a great northward loop. East of Kédougou the country is more open, for the intercolonial boundary follows the scarps that mark the northern limits of Fouta Jalon.

3. THE COAST

THE total distance from the Mauritanian boundary to Cape Roxo is 333 miles, but 40 miles of this are in the Gambia. The coast of Senegal may be divided into four unequal parts: the mouth of the Senegal river, the smooth curve that flanks the interior plain, the Cape Verde peninsula, and the creeks and estuaries of the south.

The Canary current sets southward along the northern part of the coast, but south of Cape Verde it varies with the seasons. From January to June it flows south or south-east, from June to August north or north-west, and in late August east. During the rest of the year it is variable.

Swell is strong and surf is heavy.

The Langue de Barbarie to the Cape Verde Peninsula

The Langue de Barbarie is some 27 miles long and has been built by the combined efforts of the Canary current and the Senegal. For its last 15 miles it is nowhere more than half a mile wide and it separates the river from the sea. St. Louis (p. 440) stands on an island in the river, but has three suburbs, two on the Langue de Barbarie and one on the mainland. From this mainland suburb, Sor, the railway begins its journey to Dakar. Across the mouth of the



107. *Fishermen of the Langue de Barbarie*



108. *The coast near Yof*



109. Yof

river is a sandy bar which sometimes prevents entry by ships for several weeks on end. After this the coast stretches south-south-westwards in a gentle curve of sandy beach. There are dunes along the shore, and, inland from them, the marshy depression already described on p. 397. There are very few villages and, indeed, very few landmarks of any kind. Seventy-four miles from the mouth of the Senegal the village of Kayar is perceptible from the sea. It is connected to Rufisque (17 miles) by a colonial road, and immediately south of it is Lake M'Baouar, which is seldom or never without water. After Kayar the coast trends more definitely south-west. Lake Retba, whose north-eastern end is $6\frac{1}{2}$ miles from Kayar, is a permanent salt lake fed by the sea. There are other lakes and swamps behind the littoral dunes. On the coast itself stands another village, Cambérène, which is $22\frac{1}{2}$ miles from Kayar and behind which rise the Petites Mamelles. These are three grey, isolated, sandy knolls, and they mark the beginning of the Cape Verde peninsula (Fig. 48).

The Cape Verde Peninsula and Goree Bay

Yof island (Plate 108), $3\frac{1}{4}$ miles west of Cambérène, stands off the village (Plate 109) of the same name. The beach on the mainland is accessible to surf-boats in all weathers. Just west of the village is a cable hut, where cables are landed, and a tarmac road runs southwards to Ouakam and Dakar. The coast is now more indented, and, $2\frac{1}{2}$ miles south-west of Yof, is a ledge of rocks which joins the shore to Ngor island and behind which is the village of Ngor. Three-quarters of a mile farther west the coast turns almost due south to reach Almadi point (Plate 110), the extreme west of the mainland of Africa. There is a lighthouse on a rock three-quarters of a mile out to sea. Cape Verde itself is 2 miles to the south-east of Almadi point, and behind it are two conical hills called the Mamelles. It was the stunted brushwood on these hills that gave the cape its name. From here to Cape Manuel the coast continues its south-easterly direction, being formed of red cliffs and small sandy beaches. Fann point, $3\frac{3}{4}$ miles from Cape Verde, marks the north-western end of Madeleines bay, which washes the south-western side of Dakar (p. 444). Some 2 miles south-west are the four Madeleines islands, all of which are rocky and three of which are inaccessible. At Cape Manuel, which is 131 feet high, the coast turns sharply north to form Bernard bay. North of Dakar is Hann bay, and both of these small bays are on the western side of Goree bay. This is generally considered to stretch from Cape Manuel to Cape Rouge, and in it,

1½ miles off shore from Dakar, is the historic island of Goree (p. 449). The bay is protected by the Cape Verde peninsula and affords good anchorage at a depth of 11 fathoms, and its beaches provide numerous landing-points for ships' boats.

The village of Hann, in the middle of the shore of Hann bay, is a

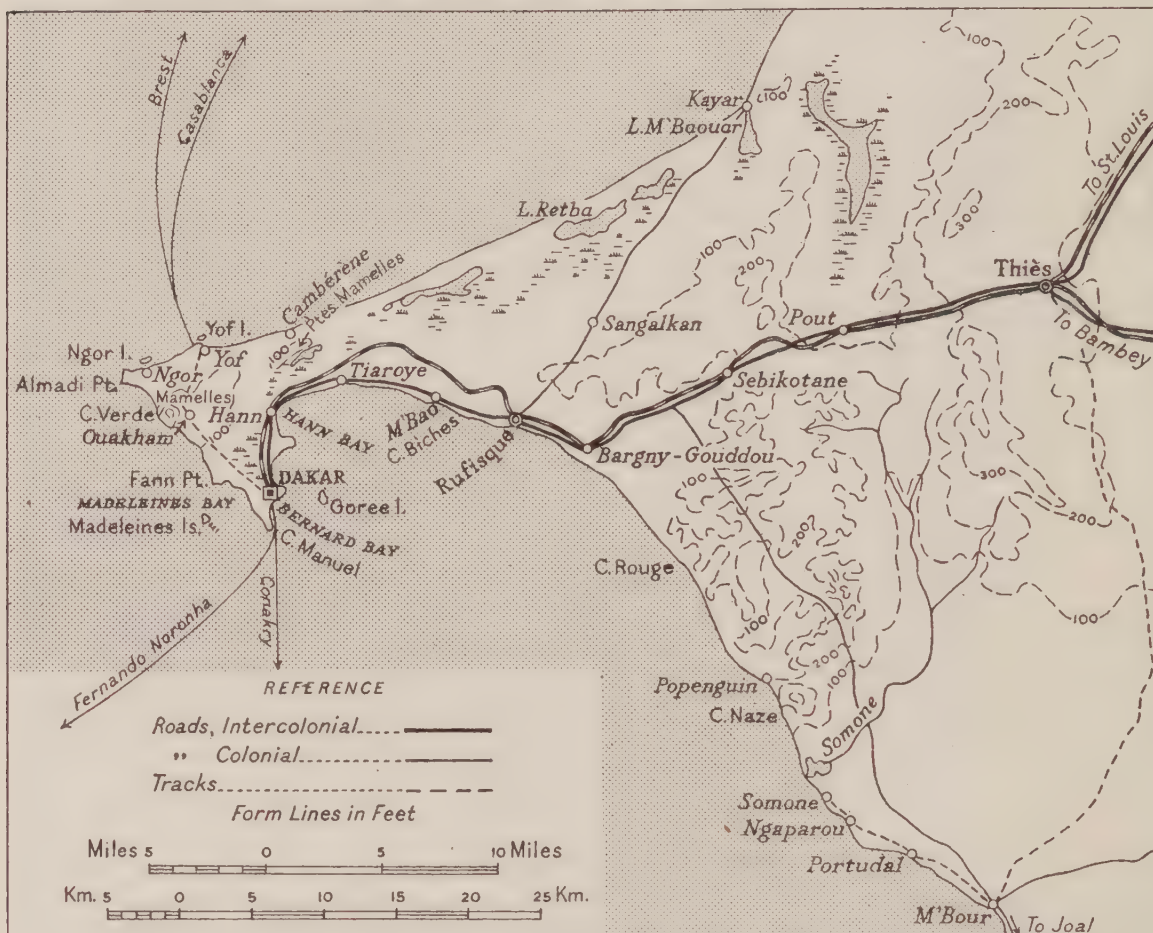


FIG. 48. *The Cape Verde Peninsula*

seaside resort for the inhabitants of Dakar. There is also a botanical garden. The intercolonial road and the railway run near the sea and are never far from it until they pass Bargny-Gouddou. North-east of Hann there is a narrow lagoon between the sea and the road, and the coast bears away north-east, east, and east-south-east for the 11 miles to Rufisque (p. 449). There is much marshland, and the sole feature of note is Cape Biches, a low promontory 2 miles before the town. Bargny-Gouddou is 3 miles east-south-east of Rufisque, and beyond it the coast is cut up by creeks and lagoons, which have small seasonal rivers running into them. Behind them are scattered sandhills which rise eastwards to hills of 200 and 300 feet. Cape Rouge, which barely projects into the sea, has red cliffs intersected by wooded ravines.

Cape Rouge to Sangomar Point

The hills are near the shore at least as far as the Somone, but the shoreline is fringed with sandy beaches and occasional mangrove swamps. Popenguin, 6 miles from Cape Rouge, has a Roman Catholic church, and, $1\frac{1}{4}$ miles farther, Cape Naze rises to 236 feet. Inland there is a hill of 400 feet. Three miles beyond the cape the river Somone finds its way to the sea through a patch of mangrove-woodland. The coast runs south-eastwards by means of a series of small bays, and the country is more settled and cultivated. A number of sandspits can also be distinguished. These have been built by the prevailing current, and they have either blocked or diverted the short streams and marigots. From the village of Somone, which is a little distance from the river of that name, there is a minor road to Ngaparou, Portudal, and M'Bour (p. 450). Portudal's great days are over, but ships can still anchor about $3\frac{1}{2}$ miles off shore in a depth of $5\frac{1}{2}$ fathoms. There is a reef to seaward of the beach, but west of the village a break allows access to a creek, where landing is possible. There are many other reefs and shoals off this part of the coast. Inland, the road is continued near the shore to Joal, but in many places its surface is very rough indeed. Two miles beyond M'Bour the Balling, a seasonal river, meets the sea, and, 3 miles farther still, is Nianing, a local centre for tracks. From here the coast runs almost due south to Sarène point, a low and sandy promontory. After this the road goes inland a little to avoid a shallow bight, heavily fringed with mangroves and crossed by several marshy streams. South of this, and 1 mile north of Senti point, is the village of Ngazobil, conspicuous by reason of its Roman Catholic church. Joal (p. 450) is $2\frac{1}{2}$ miles farther south-east. From this place onwards the coast is extremely swampy and is cut up by creeks and estuaries. Only the principal features can be noted here.

Eleven and a half miles beyond Joal stands the little village of Diakhanor. This marks the northern end of a strip of land which is strongly reminiscent of the Langue de Barbarie. It has been built by the Saloum and the sea, and it separates them for about 10 miles. An old mouth of the river is clearly observable 6 miles south of Diakhanor, and the end of the strip is called Sangomar point.

Sangomar Point to the Frontier of the Gambia

The Saloum is navigable upstream for sea-going vessels for about 100 miles, and on its banks and those of its tributary the Sine

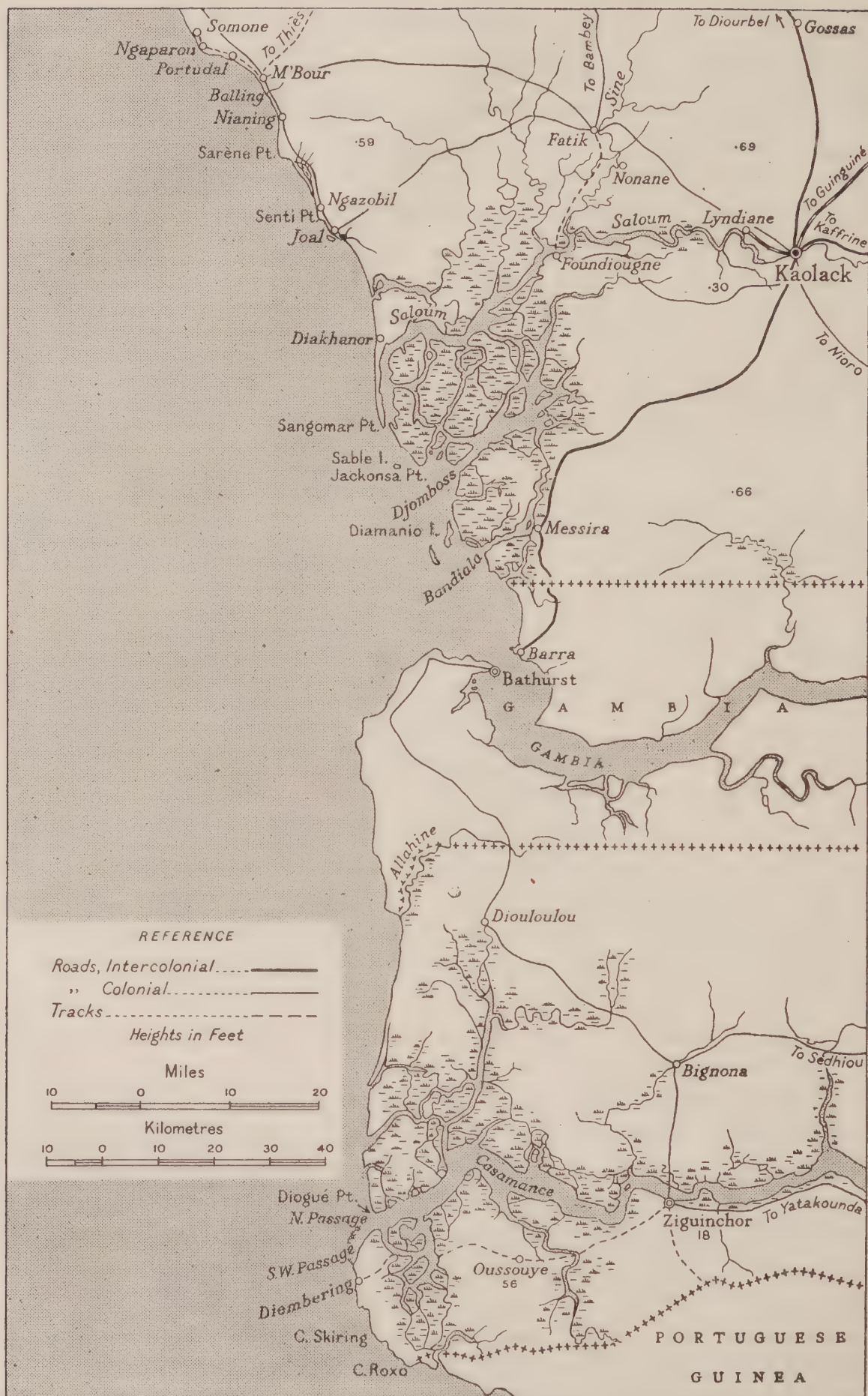


FIG. 49. Senegal: the Coast from Ngaparou to Cape Roxo

are the ports of Foundiougne (p. 451), Lyndiane, Kaolack (p. 452), and Fatik (p. 451). Its entrance is obstructed by a bar of shifting sandbanks. The principal channel, the New Passage, is immediately east of Sangomar point and has a width of 650 feet and a depth of $11\frac{1}{2}$ feet. Inside the bar the river is rather deeper. Four miles south-south-east of Sangomar point is Sable island, $2\frac{3}{4}$ miles east of which is Jackonsa point. This marks the west side of the imposing estuary of the Djomboss, which is a distributary of the Saloum, but which is also connected to the Bandiala and the Gambia. Southwards there are many shoals and several islands, and navigation is difficult. The largest of these islands is 3 miles long and its northern tip is 7 miles from Jackonsa point. Its southern tip is almost opposite another wide estuary, the Bandiala, the source or terminus of a score of muddy creeks. Four miles south-east of this estuary is the frontier of the Gambia. The next 40 miles of coast are, therefore, in British territory.

Allahine River to Cape Roxo

It has already been noticed that the Allahine (San Pedro) river forms the international frontier between the Gambia and Senegal. The mouth of this river is blocked by sandbanks, so that it connects with the sea only at high tide. For the next 18 miles the coast is flat and treeless, with white sandy beaches on which the sea breaks heavily. There are no landing-points, and off-shore depths are very shallow. After that there are some minor waterways, and, 33 miles from the Allahine, Diogu  point marks the northern shore of the estuary of the Casamance. This river, 2 miles wide at its mouth, is navigable as far as Ziguinchor (p. 453) for vessels drawing 15 feet, and as far as Sedhiou (p. 454) and Kolda for smaller craft; but the last 35 miles of its course are through mangrove swamps. The entrance to the estuary is partly blocked by a bar, but there are two places where this may be crossed. One of these, the North Passage, is off Diogu  point and has a depth of $13\frac{1}{2}$ feet, and the other, the South-West Passage, is $1\frac{1}{2}$ feet deeper. The coast that faces this passage has a low sandy beach backed by dunes, and the village of Diembering, 8 miles south-south-west of Diogu  point, is behind these dunes. The coast curves gradually south-eastwards, still exhibiting the same features but with a number of shallow bays, and between Cape Skiring and Cape Roxo there are many rocks off shore. The latter cape is also low and sandy, and it marks the international frontier with Portuguese Guinea.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	Latitude N.			Longitude W.		Altitude in feet
Podor	16°	35'		15°	02'	49
St. Louis	16°	01'		16°	30'	25
Matam	15°	38'		13°	13'	c. 70
Linguéré	15°	21'		15°	11'	c. 90
Bakel	14°	53'		12°	24'	c. 90
Thiès	14°	49'		16°	52'	207
Bambey	14°	40'		16°	25'	59
Dakar	14°	39'		17°	25'	105
Kaolack	14°	07'		16°	07'	17
Tambacounda	13°	45'		13°	39'	154
Kédougou	12°	33'		12°	10'	433
Ziguinchor	12°	32'		16°	21'	18

LIKE that of French Guinea, the colony's climatic year is divided into two distinct periods: a dry season from October to May, and a wet season from June to September. The former has north-east winds, generally clear skies, and a large range of temperature; and the latter, introduced by tornadoes, is more equable and has south-westerly winds, much cloud, and high humidity. Imposed upon this general pattern is the influence of the trade winds, which, in the dry season, keep the coast north of Dakar cooler and moister than the interior. The weeks immediately preceding the wet season are very oppressive.

Pressure (Fig. 58)

Senegal lies between the belts of northern tropical high pressure and equatorial low pressure. Although the movements of these two are very considerable during the course of a year, the local effect is negligible. Fig. 58 shows that surface pressure lies between 1012 mb. and 1014 mb. all the year, and that seasonal changes are concerned rather with the direction in which it decreases. The gradient in January is from north to south, but in July it is from south-west to north-east. Extreme variations are within 3 mb. on either side of the means.

TABLE I. *Mean Daily Pressure (1000+millibars) reduced to sea-level and corrected to 32° F. and latitude 45°*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
St. Louis	13	12	11	11	10	12	13	11	12	12	12	13	12	3
Dakar	13	12	11	11	11	13	12	12	12	12	12	13	12	2
Kaolack	11	10	09	09	09	12	13	11	11	11	11	11	11	4
Ziguinchor	12	11	11	11	11	13	14	13	13	12	12	13	12	3

There is a fairly regular diurnal range, amounting to 2 or 3 mb. near the coast and to 3 or 4 mb. inland. Maxima occur at about 10.00 a.m. and 10.00 p.m. and minima at about 4.00 a.m. and 4.00 p.m., the day extremes being the more marked. Irregular variations are infrequent and slight.

Winds (Fig. 50)

Surface Winds. As may be expected, there are two main winds: the north-easterlies and the monsoon. The former are composed of two distinct currents, the trades and the harmattan, and the difference between them has been explained on pp. 314-15. Each of the three currents brings different weather, according as the two systems swing north and south.

In January a strip of country some 40 miles wide along the coast north of Rufisque is under the trades, and the rest of the colony is covered by the harmattan. The monsoon does not appear. This state of affairs continues through February and March, but by April the monsoon is pushing north, and from that time until July the trades and harmattan retire before it. By August the monsoon, then at its strongest, covers the whole country. From September to January the monsoon is retreating and the trades and harmattan are re-establishing themselves.

None of the three currents is very strong or very deep. The annual means at most stations average from 2 to 4 m.p.h. The trades, however, are rather stronger and the annual means along the north-west coast are between 7 and 11 m.p.h., with speeds above the average in the north from January to March and below it from August to October. The mean speed of the harmattan is only about 4 m.p.h., and this fact is very evident in the quieter conditions that obtain when it intervenes in the trades and reaches the coast. The monsoon is also feeble, and, although many stations register their highest speeds as it advances, calms are frequent when it is established. It is always weaker on its northern edge than over the coast. Trades and harmattan are about 3,000 feet deep. The monsoon is the same along its northern border, but over the south in August it attains 6,000 feet. Winds of rather greater force may be met in the upper layers of all three currents.

When the seasonal wind is firmly established there is a fairly regular daily rhythm. Nights are calm except when the trades are blowing at their strongest. Winds are light in the early morning, and

rise to their maximum in the afternoon or evening. Along the coast sea- and land-breezes frequently alter the direction of the trades and the strength of the monsoon. At St. Louis, for instance, the land-breeze gives the trades a distinct easterly component in the morning, and during the day they are often north-westerly, being sucked inland from the sea. At Dakar observations from the north-east quadrant are, both for each month and for the year, higher at 7.00 a.m. than at 2.00 p.m. and those from the west at 2.00 p.m. than at 7.00 a.m. The land-breeze is the stronger in the dry season, the sea-breeze in the wet. The former strengthens the harmattan, the latter the monsoon.

Since tornadoes occur on the northern edge of the monsoon, the tornado season is from July to October over most of the colony, and the average number is about 20 per annum. In the Casamance Territory they are experienced as early as May. They are accompanied by intense lightning and thunder, and usually by torrential rain; but those which come after the wet season are often dry. Farther north they are less violent. Inland they blow up at any hour and always from the east; but on the coast they frequently occur at night and often move from south to north. The sea-breeze may prevent the formation of those cumulus clouds which are, in the interior, a normal feature of the day preceding a tornado.

Upper Winds. Above the sea- and land-breezes and the three surface currents are easterly winds, and above them again light westerlies. The boundary between the two last is always higher in the south.

During the dry season the upper surface of the easterlies lies above the trades or harmattan at a mean height of from 5,000 to 10,000 feet over the Senegal and about 15,000 feet over the Casamance. When the easterlies lie above the monsoon they extend to very great heights, at least 25,000 feet in the north and 30,000 feet in the south. There are, however, great diurnal and even hourly variations: at times the easterlies form only a very thin belt in the north, and on at least one occasion the westerlies have been noted directly above the trades over Dakar.

The easterlies are continental in origin and carry a dust haze, and for this reason it is difficult to define their base above the harmattan. By some meteorologists, indeed, they are considered to be the same current, but they may easily be distinguished from the other two surface winds. They are some 10° – 15° warmer and 15–50 per cent. drier than the trades, but they are several degrees colder and drier

than the upper surface of the monsoon. The speed of the easterlies is about 5–15 m.p.h. at their base and 15–25 m.p.h. in their higher levels. A shallow zone of calm air is often found along their junction with the monsoon.

Little is known about the westerlies, but at their base their temperature is several degrees lower and their relative humidity higher than

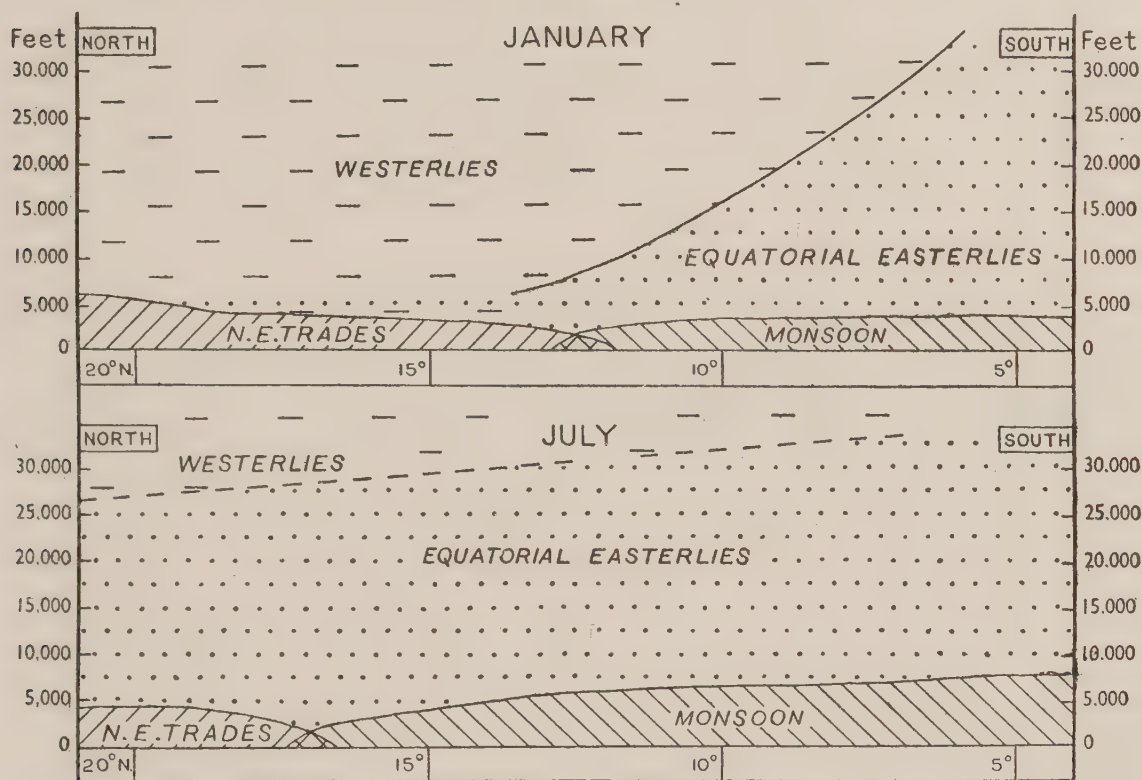


FIG. 50. *Vertical Distribution of Wind: Longitude 16° W.*

those of the top of the easterlies. Their speed is usually less than 15 m.p.h., but above 35,000 feet it is occasionally very much more.

Rainfall, Cloud, and Thunder

Rainfall (Fig. 59). Since rain is brought by the monsoon, the wet season in the south is longer and opens earlier. About one-third of the annual total falls in August. As a general rule, rain is heavier in the south and along the coast. In the north-east of the colony the year's total is received from a few isolated storms, but their effect on rivers, roads, and vegetation is much more pronounced in the interior. Except along the coast, where there is much at night, most rain falls in heavy showers during the afternoon. Amounts for any twenty-four hours may be heavy enough to dislocate communications, but even at the height of the season several fine days normally separate two wet ones.

TABLE II. Mean Rainfall

R = Rainfall in inches. X = Maximum fall in 24 hours. D = Number of rain-days.

Station	Yrs'. obsns.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	
COAST															
St. Louis .	9-10	R	..	..	..	0.07	0.34	2.18	7.66	4.04	0.96	0.14	0.02	15.46	
		X	0.05	0.02	..	0.30	0.89	2.23	3.31	3.10	1.54	0.55	0.10	3.31	
		D	0.7	0.3	0.1	0.1	0.6	1.7	4.6	12.4	8.4	2.7	1.0	0.6	33.2
Dakar .	10	R	0.02	0.02	0	..	1.15	3.51	10.41	5.71	1.65	0.17	0.02	22.68	
		X	0.06	0.09	0	0.03	2.23	5.94	8.42	2.85	3.78	1.00	0.08	8.42	
		D	0.6	0.3	0.2	0	0.2	2.4	8.8	15.1	12.6	4.0	0.8	0.4	45.4
Ziguinchor .	10	R	..	0	..	0.45	5.61	16.03	21.96	13.31	6.27	0.32	..	64.00	
		X	0.01	0.47	0	0.06	1.23	2.79	5.95	8.51	5.16	4.68	0.50	8.51	
		D	0.2	0.1	0	0.1	1.4	10.1	22.0	24.5	20.7	11.0	1.4	0.1	91.5
INTERIOR															
Podor .	10	R	0.03	0.11	0.01	0.19	0.61	3.30	5.77	2.10	0.73	0.21	0.03	13.13	
		X	0.16	0.27	0.67	0.08	1.06	1.30	4.55	4.29	1.72	1.12	1.22	0.24	4.55
		D	0.3	0.1	0.4	0.2	0.7	1.6	4.5	8.4	5.5	1.7	0.4	0.3	24.1
Matam .	10	R	0.10	0	0.02	0.10	2.78	5.53	8.54	4.86	0.59	0.02	..	22.54	
		X	0.50	0	0.17	0	1.36	5.32	5.71	7.50	2.26	1.11	0.08	0.01	7.50
		D	0.2	0	0.2	0	0.8	4.8	7.2	10.9	7.8	1.6	0.4	0.1	34.0
Linguéré .	10	R	0	0.01	0.35	0.10	1.24	4.86	10.63	5.66	2.00	0	0	24.85	
		X	0	0.04	1.06	0	0.39	0.92	2.63	4.02	2.91	1.93	0	0	4.02
		D	0	0.2	0.6	0	0.4	4.2	7.8	13.2	10.0	4.6	0	0	41.0
Bakel .	10	R	0.06	0	0	0.22	1.93	4.06	7.11	6.14	1.10	0.08	0.09	20.80	
		X	0.59	0	0	0.10	1.28	2.07	3.52	5.45	3.01	1.65	0.12	0.01	5.45
		D	0.1	0	0	0.1	0.8	4.6	7.6	9.1	8.4	2.2	0.2	0.2	33.3
Tambacounda .	10	R	0.02	0.03	0.04	1.11	6.85	7.62	11.96	8.49	3.18	0.11	0.01	39.56	
		X	0.08	0.28	0.32	1.13	2.24	3.54	4.00	5.79	4.74	2.21	0.84	0.06	5.79
		D	0.2	0.1	0.3	0.2	2.0	9.5	12.1	17.0	13.2	5.4	0.7	0.2	60.9
Kédougou .	10	R	0.02	0.01	0.04	2.82	7.15	10.30	11.57	12.81	4.71	0.69	..	50.18	
		X	0.17	0.06	0.28	0.16	3.19	2.95	3.98	6.26	3.70	1.87	2.21	0.02	6.26
		D	0.1	0.1	0.2	0.6	4.4	12.1	14.1	17.1	16.5	9.6	1.4	0.1	76.3

Mean figures should be used with reserve, for in Senegal, as in the rest of West Africa, variations are considerable. At St. Louis, for example, only 5 inches of rain fell in 1903, but there were 26 inches in 1912. At Dakar the 1937 total was 15 inches, but that of 1938 was 27 inches. The September fall of Tambacounda was 0·71 inch in 1937 and 9·45 inches in 1939.

Hail has been recorded in the colony, but quite irregularly.

Cloud. Although records are only available from stations near the coast, there is always more cloud in the south, and the monsoon brings a general increase. Since the amount of cloud is closely allied to the rainfall, the pall of cloud advances north from April and then retreats.

The mean for the dry season is 2 to 4 tenths of sky covered. The wet has 4 to 8 tenths in the north and 6 to 9 tenths in the south, with higher figures in the morning except along the southern coast. Nights are normally clear. The harmattan is almost cloudless both by day and night, but cirrus and alto-stratus often mark the base of the westerlies during the dry season. The trades usually carry light cumulus clouds by day, but only near the land. The monsoon cumulus, whose base lies at about 1,500 feet, is heavier. Rain falls from nimbus and cumulo-nimbus. At the height of the wet season in the south nights are occasionally as cloudy as days, but even then a uniformly overcast sky is uncommon.

A tendency to greater cloudiness has been noted in two areas: along the coast just south of Dakar and, during the monsoon, on the windward slopes of the northern spurs of Fouta Jalon.

Thunder. Thunderstorms are almost unknown in the dry season, and are rare at sea off the colony at any time of year. They occur during the rains, with a maximum between July and September. In the north there are from 25 to 30 per annum with about 8 in the worst month. They are more numerous in the south, and the annual total varies from 80 or 90 on the coast to 40 or 50 inland. The average for September, their worst month, is 10 at Tambacounda and 20 at Ziguinchor. The first and last storms are often dry, i.e. without rain falling on the ground. Along the coast thunder is associated with a tornado at night but not necessarily by day.

Temperature and Humidity

Throughout the year temperatures are high and rarely fall below 60°. In the dry season the cooler nights and lower humidity are not

unpleasant, but the afternoons are hot. Between July and September the rainfall is sufficient to lower day temperatures except in the north-west. Nights, however, remain hot and the humidity rises, so that this season is most oppressive.

Temperature. Table III indicates clearly the essential points of the seasonal changes: the lower temperatures on the coast as compared with the same latitude inland; the single maxima at St. Louis and Dakar and the secondary rise after the rains at all other places; the greater diurnal range in the dry season; and the smaller seasonal changes in the south, especially on the coast.

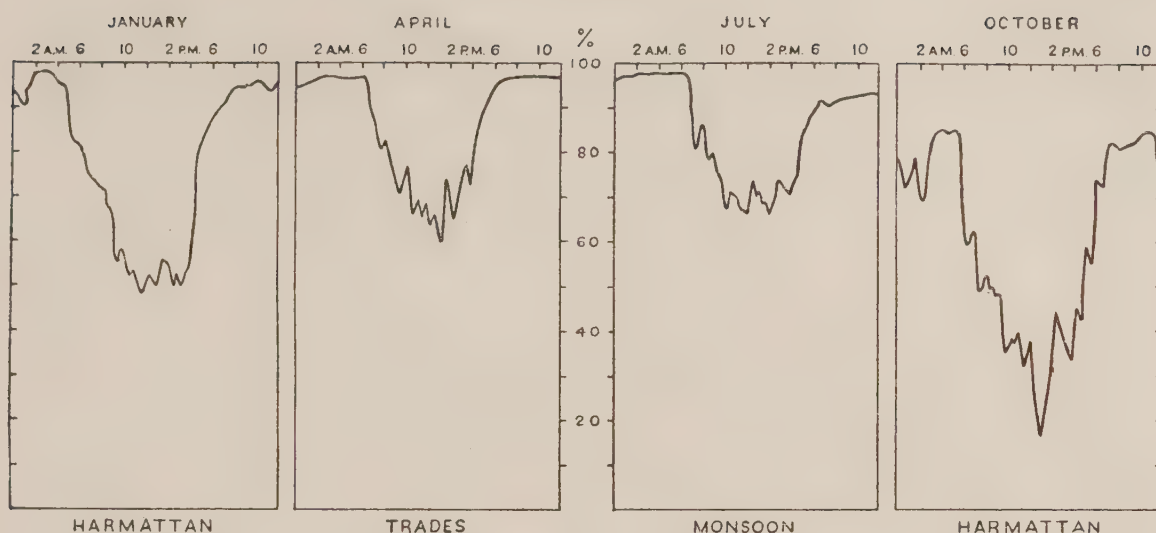
The coolest hour is just before dawn and the hottest in mid-afternoon, and the average diurnal range in the dry season is some 25°-30°. Temperatures in the open may be as much as 20° higher or lower than screen figures. Irregular variations are rare, but rain and tornadoes cause an abrupt fall of several degrees, and along the coast when the sea-breeze takes the place of the harmattan temperatures may fall by a dozen degrees in as many minutes.

The level at which freezing-point is reached is rarely below 15,000 feet. Serious icing is only experienced in well-developed cumulo-nimbus clouds.

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
St. Louis	85	85	83	77	79	86	89	90	91	89	88	85	86	14
	60	61	63	63	66	74	77	77	77	76	70	63	69	17
Linguéré	95	97	100	107	110	107	99	92	93	97	95	93	99	18
	56	59	63	67	72	76	75	74	73	73	63	59	67	20
Dakar	82	83	82	80	82	88	88	87	88	88	87	83	85	8
	65	64	65	65	68	74	77	76	77	76	73	68	71	13
Kaolack	95	98	101	105	104	99	94	91	91	93	97	94	97	14
	61	63	65	66	71	76	75	75	74	73	67	64	69	15
Tambacounda	95	99	102	106	103	97	90	87	89	90	95	93	96	19
	59	61	67	70	76	74	72	72	72	72	63	59	68	17
Ziguinchor	91	94	96	96	95	92	88	85	87	89	90	87	91	11
	62	63	67	68	72	75	74	74	74	74	71	65	70	13

Humidity (Fig. 51). The figures of Table IV show no very great extremes, but both the highest, with the monsoon, and the lowest, with the harmattan, can be very distressing.

FIG. 51. *Relative Humidity at Dakar*

Relative humidity is always highest in the west and south. Variations from the mean are greatest during the dry season and in the interior. Along the coast the relative humidity rises noticeably in the afternoon, when the sea-breeze displaces the harmattan.

TABLE IV. *Mean Relative Humidity (percentages)*

Two observations: 8.00 a.m. and 6.00 p.m. Three: 8.00 a.m., 1.00 p.m., and 6.00 p.m.

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
St. Louis . . .	59	68	76	87	82	81	81	85	85	82	66	60	76.0	26
	33	44	54	73	69	67	67	70	70	66	46	47	58.8	27
	55	63	68	79	75	74	71	74	73	74	66	61	69.4	24
Dakar	67	76	84	87	84	83	81	86	87	86	78	67	80.5	20
	43	45	53	58	59	63	67	73	72	67	51	44	58.0	30
	50	51	59	65	69	70	70	77	76	72	62	57	64.8	27
Kaolack	59	63	70	76	77	84	88	93	94	92	75	64	77.9	35
	33	29	30	34	43	54	67	79	76	67	43	39	49.5	50
Tambacounda . .	39	40	42	49	57	76	86	92	92	92	79	59	66.9	53
	16	16	16	16	28	47	65	76	74	70	47	31	41.8	60
Ziguinchor . . .	75	82	86	86	87	90	95	96	96	94	87	77	87.6	21
	40	42	44	42	49	63	76	81	75	72	57	49	57.5	41
	42	44	46	52	56	65	81	86	81	76	63	57	62.4	44

Visibility

Annual means are from 9 to 11 miles at 8.00 a.m., from $12\frac{1}{2}$ to 18 miles at 1.00 p.m., and from $12\frac{1}{2}$ to $16\frac{1}{2}$ miles at 6.00 p.m. with the higher figures in every case to the south. In general, visibility is best in the trades and monsoon and worst in the harmattan and easterlies. In the harmattan it is normally only from $2\frac{1}{2}$ to 5 miles and may be less than 1 mile for several days on end. On the other

hand, in September at Ziguinchor, for example, the midday mean rises as high as 48 miles, although at that time of year interference from cloud is greatest. Whatever the season, conditions are better at midday and in the evening than in the morning.

Temporary deterioration is caused by sand storms, fog, bush fires, and rain. The first occur during December and January over dunes such as those in Fouta and Ferlo. In them visibility may drop to less than 100 yards and the ensuing haze persists for several days over large areas. Fog is common before and after the rains and is to be expected over the southern estuaries at any time of the year when winds are light. It rarely extends above 500 feet or lasts after 9.00 a.m. Between February and April there is local interference from the smoke of bush fires, which rises 2,000 or 3,000 feet. In the wet season heavy rain naturally causes temporary deterioration. At this season also low cloud often blots out the tops of the spurs of Fouta Jalon.

Swell and Surf

Details of swell at Dakar are given in Appendix II, and they may be taken as typical of conditions along the whole of the coast of the colony. On beaches farther north there is slightly more north-westerly swell and on those to the south rather more from the south-west. Heavy seas are rare.

Surf, on the other hand, is everywhere heavy. On exposed beaches south of Cape Verde, for instance, rollers sometimes curl in 30 feet of water and break in a depth of 10 feet. Surf is especially dangerous at the mouths of estuaries when a strong ebb-tide is running.

Meteorological Services

Dakar is the chief meteorological station in French West Africa, and St. Louis, Tambacounda, and Ziguinchor are also fully equipped for recording both surface and upper air conditions. Their reports are included in the synoptic broadcasts from Dakar, which cover the whole of the west coast. Secondary stations are at Bambey, Kaolack, Linguéré, Podor, and Thiès, whose reports are also included. Twenty-six other places record rainfall.

5. VEGETATION

MOST of the colony falls within two of the main vegetation zones. To the north there is the thornland, while to the south the zone of grass-woodland has two subzones, the Sudan and the Guinea, and

one coastal area, the Casamancian. Except in these last two belts the climate is deficient in rainfall, and it is the length of the dry season that controls the distribution of plant communities.

Along the coast as far south as the Cape Verde peninsula is the southward extension of the sub-Canarian area, a description of which has been given on p. 320.

The Thornland

The thornland occupies the northern part of the colony from a little north-east of Dakar eastwards to Kidira and northwards to the Senegal. This region, it will be recalled, has a rainfall of from 10 to 20 inches. It is a country of spiny shrubs, especially species of *Acacia*, associated with which are the soapberry tree, the African myrrh, and *Combretum aculeatum*. Many of the trees and shrubs are without leaves during the dry season, but some are evergreen. The natural vegetation in this zone has been much devastated by fire, pasturage, and the over-exploitation of the gum-yielding acacias. On the other hand, annual firing of brushwood and grassland plays a subordinate part in modifying the plant life. The more open nature of both the woody and herbaceous vegetation impedes or prevents fires spreading over great extents of country. Tufted grasses are particularly abundant in the open grasslands between, and even under, the trees and bushes.

The Grass-Woodland

If the Casamancian area be considered as a modification of the Guinea subzone, the grass-woodland may be said to occupy the remainder of the colony. The Sudan subzone is, however, the more important. In the western part of the colony the subzones run north-west to south-east, extend across the Gambia, and then turn almost due west and east. The northward bend in the west is due to oceanic climatic influences, and the modified Casamancian area is similarly due to a greater humidity. The vegetation of the zone as a whole consists of a mixture of trees and grasslands, the former either being spaced in clumps or patches or standing as individuals. The grasslands are continuous over wide areas and are fired regularly in the dry season. This firing of brushwoods and grasslands, together with centuries of heavy cultivation, has highly modified the natural vegetation, especially towards the west. This is especially exemplified by forest destruction in the Guinea subzone.

The vegetation of the Sudan subzone corresponds to an annual

rainfall of from 20 to 60 inches. In appearance it is reminiscent of a park or orchard, with well-spaced trees or small clumps of trees projecting well above the herbaceous layer, and the most characteristic trees are from 18 to 45 feet tall. The most frequent in Senegal are the African locust bean, the tallow tree (*Detarium senegalense*), the ginger-bread plum or pomme du cayor (*Parinari macrophylla*), various legumes (*Cassia sieberiana*, *Entada africana*, *Acacia sieberiana*, *Albizzia ferruginea*, *Prosopis africana*, *Cordyla africana*, and *Pterocarpus erinaceus*), the Borassus palm (*Borassus aethiopum*), *Combretum glutinosum*, *Terminalia macroptera*, *Sterculia setigera*, *Cola cordifolia*, and the Meni oil tree. Shrubs and climbing woody plants are locally associated with the trees, but plants growing on the trunks and branches are generally absent. Parasites of the mistletoe family, however, are common. Most of the trees lose their leaves at the advent of the dry season. The grasslands consist mainly of grasses of the tribe Andropogoneae.

Excluding the Casamancian area, the Guinea subzone occupies two small regions north-west and south-east of the Gambia. At one time parts of this subzone were covered by dense forests, but to-day there are only scattered relicts. Much of the country is cultivated, and the rest is subjected to the continued degrading influences of fire, grazing, and shifting cultivation. As a consequence, a degraded brushwood on impoverished soil represents the weed flora of several years' fallow. This is cut down, and the cultivation of ground-nuts and cereals follows for a period of years; after which the ground is again allowed to go fallow. Many of the weeds are of American or Indian origin.

The Casamancian Area. The Casamancian area (Vol. I, p. 101) is the most tropical part of the colony. The Casamance river and the coastal channels are bordered up to tidal limits by thick mangrove-woodland. Behind this there are often marshy clearings, now frequently transformed into rice-fields, and stretches of forest communities. Swamp-forests and thickets have screw-pines, palms (*Raphia*, *Calamus*), and bamboos. There are also frequent clumps of oil palm. In the remnants of high forest legumes are abundant and include species of *Afzelia*, *Dialium*, *Daniellia*, *Erythrophloeum*, *Pentaclethra*, *Parkia*, and *Acacia*. Noteworthy trees of the forest patches are a dragon's tree (*Dracaena*), the pattern wood (*Alstonia congensis*), the African teak (*Chlorophora excelsa*), and the silk-cotton tree (*Ceiba pentandra*). Many of them have a height of more than 60 feet.

7. HISTORY

SENEGAL is the oldest French colony in Africa. From it the Niger basin has been penetrated and the Sudan conquered. On it has been based the modern Federation. For more than two centuries, therefore, its history was that of French West Africa as a whole, and it is not until the close of the Napoleonic era that the domestic history of the colony becomes distinguishable.

The Early Nineteenth Century

The Peace of Paris restored the colonial *status quo* of 1 January 1792, but St. Louis was not returned to the French until 1817. The British occupation of Senegal had been purely military, with no attempt to introduce British civil administration. French officials had continued their duties, and, when they had died, had been succeeded by other Frenchmen. The resumption of French rule after the war, therefore, presented no difficulties. The country was fairly well known, and explorers used St. Louis more as a starting-point for distant journeys than to make new discoveries in Senegal itself. The British expedition of 1816 under Peddie and Campbell and the French one of 1818 under Mollien added considerably to European knowledge of Fouta, Ferlo, and Bondou, although their main objects were to penetrate Fouta Jalon.

Attempts at European Colonization. In 1815 France agreed to the abolition of the slave trade, although the law embodying this decision was not passed for another three years. As the trade had previously been the key to the prosperity of Senegal, a new economy had to be devised. Experiments were consequently made with European settlers, who were to produce cotton and other tropical products. To execute these schemes, Louis XVIII appointed as first post-war Governor Colonel Schmaltz, who had lived for a number of years in the Dutch East Indies. Tragedy attended his voyage out. The ship carrying him, the *Méduse*, was wrecked in Arguin bay on 2 July 1816. The Governor and his wife were saved, but there were many deaths from drowning; and hunger, thirst, and exposure killed many who reached the shore. Out of one party of seventeen only three survived. Another party of 152 persons, including women and children, crowded on to one raft. Many were washed off by waves, many went mad, and many died of thirst. After thirteen days of horror, fifteen survivors were picked up, five of whom died before

reaching St. Louis. This disaster has been made famous by the celebrated painting of Théodore Géricault.

As St. Louis was in British hands until the early months of 1817, Schmaltz established his capital at Cape Verde.

The first settlers from France were sponsored by the Société Coloniale Philanthropique, and consisted of 175 men, 20 women, and 10 children. Their intention was to settle in the Cape Verde peninsula. This was against the advice of Schmaltz, who thought that part of the country unsuitable. The settlers landed at Goree in April 1817, shortly afterwards crossing to the mainland; but, owing to the attitude of the natives, they were unable to obtain land or labour. At the end of two months there were only six left on the peninsula: the remainder had been repatriated to France or had retired to St. Louis, Goree, or the Gambia. Schmaltz was able to prevent the philanthropic but misguided society from sending eighty more colonists to the same place.

Attempts to establish European colonists met with more success on the Senegal. In 1819 Schmaltz had no difficulty in obtaining from the chiefs of Oualo all the land he wanted on the left bank of the river. In return, the chiefs were given annual subsidies (*coutumes*) amounting to some 10,000 francs. This arrangement was to lead to endless trouble. Cotton, coffee, indigo, and tobacco were to be the principal crops, and colonists were not lacking.

The natives of Oualo were peaceable, but the Trarza and Brakna Arabs, who claimed to be suzerains over Oualo, were hostile. At first they raided the colonists, but later they were defeated by troops from St. Louis in a number of skirmishes. Eventually the French recognized nominal Arab suzerainty, and the colonists were allowed to develop their holdings in relative quiet. Nevertheless, the Trarza Arabs continued to give trouble until 1835, when, after a series of defeats, they entered into a treaty by which they abandoned all claims to Oualo. The French armed post of Dagana was built for the protection of the settlers, and an experimental station was started at Richard Toll for their instruction. The French Government supplied seeds and implements and paid a bonus on crops, and some forty European plantations were established. At first they seemed to succeed, but the climate, the labour difficulties, and the hostile attitude of the natives combined against them. In 1830 the home government withdrew its subsidy, and the plantations were soon abandoned. Since that date the French, while not discouraging European enterprise, have relied for agricultural



110. *Almadi point*



111. *A baobab tree*



112. *Goree*

development principally on the native farmer. Trade, not agriculture, took the French farther up the river. In 1820 the post of Bakel was founded, and, under the auspices of Governor Roger, the Société de Galam established stations at Medine, at Mahina, and on the Falémé. The foundation of the company marked a partial return to the monopolistic policy of the previous century. Trade on the upper Senegal was reserved to the company from 1 January to 1 August each year. This caused much dissatisfaction, and the restriction disappeared with the winding-up of the company in 1840.

Like Brue, his predecessor of 120 years before, Roger explored Bambouk for its mineral wealth, but decided that the soundest method of developing Senegal was to expand its trade and agriculture.

The Gum Trade. After the attempts at European colonization had failed, there developed in the gum trade a boom which reached its maximum in 1838. It will be remembered that, by the Peace of Paris, Great Britain had retained the exclusive right of carrying on this trade along the coast between Portendick and Arguin bay. Elsewhere the French reserved all this trade for their own nationals. Like other trades of the time, that in gum was carried on under a system of subsidies (*coutumes*) to native chiefs and fixed markets (*escales*). This system has been described above on p. 327, and was extremely lucrative to the Arabs. Moreover, the French Government in its treaties usually undertook to pay a subsidy to the chiefs, partly as ground rent for the posts it might establish in their territory, and partly in consideration of the goodwill and protection they were to afford to French trade.

Even so, the years between 1830 and 1860 saw material French extension and development. The following figures (the first two of which represent imports only) show the growth of trade of Senegal from the days of André Brue to those of Faïdherbe.

<i>Year</i>						<i>Thousands of francs</i>
1700	.	.	.	.	.	700
1786	.	.	.	.	.	7,260
1821	.	.	.	.	.	2,100
1830	.	.	.	.	.	3,000
1837	.	.	.	.	.	7,000
1838	.	.	.	.	.	17,000
1839	.	.	.	.	.	13,600
1840	.	.	.	.	.	11,800
1845	.	.	.	.	.	23,000
1855	.	.	.	.	.	14,500
1863	.	.	.	.	.	33,100
1869	.	.	.	.	.	35,300

From 1836 onwards treaties were made with the chiefs of the Casamance basin, and posts were constructed at Sedhiou, Karaban, and Diembering. These treaties respected Portuguese historic but obsolete rights at Ziguinchor, but effectively guaranteed that the future of the river should be French.

The abolition of the status of slavery by France in 1848 deprived the French merchants of a cheap supply of labour, which they had rented from the chiefs, and in 1850 a committee was appointed to consider withdrawal from the colony or, as an alternative, the establishment of French authority. It decided in favour of the latter, and the policy of trade treaties came to an end.

The new French policy, to which Napoleon III was pledged, was summed up as 'absolute freedom of commerce with the suppression of the escales; establishment of security, by force if necessary; the substitution of full and entire authority for the system of treaties and subsidies; methodical organization of expansion towards the interior; and concurrently the development of economic institutions'.

'By Force if Necessary'

Faidherbe. It was to carry out this policy that Faidherbe was appointed Governor of Senegal in December 1854. He had already had much experience as a soldier and administrator in the colony, and, with a break of eighteen months, he held office till July 1865. His period of office marked a turning-point in the history of Senegal, and he is justly remembered as one of the builders of the modern French Colonial Empire. At first his resources were pitifully small. He had four companies of marine infantry, a company of native infantry formed on the liberation of the slaves in 1848, sixty spahis, and some detachments of artillery and engineers. His naval strength was on a similar scale. Both were substantially strengthened in the next few years.

The Arabs. Faidherbe decided to deal with the Trarza Arabs. Notwithstanding the treaty of 1835, they had continued their marauding expeditions across the river, and had re-established a supreme influence over the Ouolofs of Oualo. Early in 1855 the Trarza chief Mohammed el Abib insolently demanded the French evacuation of certain islands near the mouth of the Senegal. Faidherbe marched against him and defeated him near St. Louis on 15 February. On 25 February the Ouolofs were defeated near Ross. The French captured more than 2,000 cattle and burned 20 villages.

After another victory in March at Diagane near Merinaghen, Faidherbe annexed Oualo. He divided it into provinces under chiefs nominated by himself, and set up Fara Penda, who remained faithful, as king. In two years many villages destroyed by the Arabs were rebuilt and the population of Oualo rose from 17,000 to 34,000. Faidherbe, who was loath to use force before persuasion had failed, then offered Mohammed el Abib peace if he would renounce the subsidies. The Arab replied by demanding an increase in payments, the destruction of French forts, the prohibition of armed vessels on the Senegal, and the recall of Faidherbe to France. During the absence of Faidherbe in Oualo, Mohammed el Abib advanced in April 1855 to the gates of St. Louis, from which he was beaten back. This marked the limit of Arab successes. In the following January an engagement near Lake Cayar resulted in the capture of 600 tribesmen, and other skirmishes had similar results. Despairing of bringing the main Arab armies to a pitched battle, Faidherbe determined to subdue them by famine, and set himself to destroy or capture their cattle and supplies. By May 1856 these tactics reduced the Arabs to dire straits, and several tribes submitted. The chief's son Ely fled to Diambour. Faidherbe pursued him, and annexed the province which is now Louga. Mohammed el Abib held on, however, and in 1857 invaded Oualo. He was heavily defeated. At last he sued for peace, and on 20 May 1858 signed a treaty (p. 328). A parallel treaty was concluded with the Brakna Arabs at Podor on 10 June.

Although the commercial provisions of these treaties were revised later, they brought to an end, once and for all, the Arab menace to the peace and development of Senegal.

In 1859 a similar organization to that of Oualo was set up for Dimar, thus extending the colony as far up the river as Podor.

Further Penetrations. Faidherbe's dealings with the Arabs and the Ouolofs have been described in some detail, as they illustrate his abilities as a general, a diplomatist, and an administrator. By the same combination of force and diplomacy he, or his successor Pinet-Laprade, brought Fouta, Toro, the whole Ferlo country, Cayor, Sine, Saloum, and the Casamance under effective French control. He thus completed the outline of the modern colony. In 1859 the fanatically Moslem Toucouleur of Fouta, under their Almami, Mahamadu Birane, submitted to a division into three independent states under French protection: Dagana, Fouta, and Toro. In 1862, while Faidherbe was in France, the Almami revolted and tried to re-establish his paramountcy. This revolt was quelled

after severe fighting, and in 1863 Fouta and Toro were definitely annexed by the French.

Cayor. The state of Cayor extended from Cape Verde northward along the coast nearly to St. Louis, and at the end of the eighteenth century it had obtained independence of the Ouolofs. Goree had been taken by the French from the Dutch in 1677, and by treaties of 1764 and 1765 the Damel of Cayor had ceded the tip of the Cape Verde peninsula in full sovereignty to France. He had further agreed to restrain his subjects from pillaging the cargoes of wrecks and from imprisoning their crews. In return he was to receive an annual subsidy of 180 bars, one-third in iron and the remainder in merchandise.

These treaties, however, had never been implemented. In 1825 Governor Roger considered them dead, and advised Frenchmen who wished to acquire land in the peninsula to make their own arrangements with the native authorities. At the same time, Roger made a fresh convention regarding wrecks, which was no more observed than the earlier treaties. In 1832 land was purchased for a cemetery on the mainland and in 1846 a mission of the Society of the Sacred Heart, which received a government subsidy until 1906, was established at Dakar.

The population of Goree, some 5,000 persons, needed wood, water, building materials, and fresh provisions, which they could only purchase at extortionate prices on the mainland. All efforts to conclude agreements with the chiefs on these matters failed, and wreckers' profits were not to be diminished by scraps of paper. Security was needed for the projected railway from St. Louis and it was desirable to give the priests protection. In 1857, therefore, the French Government authorized the construction of a fort on the mainland. Birahima, the reigning Damel of Cayor, at first acquiesced in this occupation, largely because his authority over the Lebous who inhabited the peninsula had long been but nominal. The post was used by Faidherbe for a base for his operations in 1859. In that year, after the battle of Fatik (18 May), the tribesmen of Sine, Saloum, and Baol submitted to French authority, and posts were created at Joal and Kaolack. Trouble arose under the Damel's successor, Makodou, who refused to recognize Birahima's agreement to allow a French road and telegraph line from St. Louis to Goree to be run through Cayor. A French column from St. Louis under Faidherbe met an expedition under Pinet-Laprade from Goree and occupied Makodou's capital, Mekhé, on 12 January 1861. On 1 February he accepted

French protection. Hardly was Faidherbe's back turned when Makodou repudiated his engagements. A fresh expedition was necessary, and on 12 March Makodou's forces were repulsed again at Diati near Mekhé. Faidherbe thereupon encouraged an internal revolt, which resulted in the flight of Makodou and the recognition of Madiodio as Damel. He in his turn was dethroned by Lat Dior, whom the French also recognized. He also failed to observe his predecessor's treaties, and in 1863 Faidherbe marched against him and re-established Madiodio. In the December of that year Lat Dior gathered his forces and fell upon the French garrison of Goumbo Gueoul, when Captain Lorans and almost all his detachment of 140 tirailleurs were killed. This time there were no half measures: Lat Dior's army was cut to pieces by Pinet-Laprade near Pout on 12 January 1864, but he himself escaped to the Gambia. Faidherbe then suppressed the native kingdom, established a French protectorate, and divided Cayor into cantons, each under a chief of his own appointment.

In 1865 Pinet-Laprade, who had succeeded Faidherbe, had to deal with a mallam named Maba, who threatened to involve in a holy war not only Cayor but also the country as far east as Fouta. In 1869 Lat Dior again invaded Cayor, and in 1871 was again recognized by the French as Damel, though shorn of part of his territory. This arrangement worked well for ten years, and when Ahmadu Checkhou, a mallam of Toro, invaded Cayor, the French could not refuse armed aid to Lat Dior. The former was defeated and killed by French forces at Boumdou near Coki in February 1875. In 1881 Lat Dior once more gave trouble by opposing the construction of a railway, and, after military operations, he was replaced by his nephew. Internal unrest followed for some years and Lat Dior tried to take advantage of it; but on 26 October 1886 he was defeated and killed. The protectorate was finally abolished, and Cayor was annexed to the colony.

At the close of Faidherbe's term of office in 1865 modern Senegal may be said to have emerged. It would be a mistake to regard him only as a conqueror, for, though his primary object was to impose French authority, Senegal owes to him the foundation of its civil administration, its education, its banking system, and its Survey Department. Sympathetic to the natives, he tried to preserve their institutions to the utmost extent compatible with his primary object. While not prepared to discourage European colonization under suitable conditions, Faidherbe considered that the main agricultural

development must be by native farmers guided by French instructors and aided by French capital. In 1861 French colonial trade, which had hitherto been restricted to French merchants and the French flag, was thrown open to all nations, though French goods continued to have a preference. This reform was not well received by the conservative merchants of St. Louis, but there can be no doubt that it rapidly proved of benefit to the colony.

Mahmadu Lamine. The last challenge to French rule within the boundaries of Senegal arose from a Soninké mallam named Ahmadu Lamine. Having returned from a pilgrimage to Mecca, he set up as a holy man at Medine and proceeded to interfere in the domestic concerns of the natives of Bondou. Rebuffed by their rightful ruler, he installed himself at Sénoudébou early in 1886, proclaimed himself a mahdi, and claimed a holy mission to restore the ancient power of the Sarakollé dynasty (Vol. I, p. 168). In March and April he attacked the fort of Bakel, at the head of 12,000 fanatics, but was repulsed. In May Colonel Frey marched out from St. Louis with a strong column which relieved Bakel. Notwithstanding this, Ahmadu again invaded Bondou, where he defeated and killed the king. Then he attacked the French post at Sénoudébou, crossed the Senegal, and endeavoured to cut the French communications between Bakel and Kayes. Galliéni himself, who had been recently appointed to command the troops in Upper Senegal, took the field against him and broke his power in several engagements. The mallam fortified himself at a village 46 miles south-west of Tambacounda. This village was taken by the French on 8 December 1887. Ahmadu escaped; but he was attacked by allies of the French on 9 December, and two days later died of his wounds. All the tribes of the country north of the Gambia boundary then sought French protection. Later disturbances in Senegal had their origin either in internal tribal dissensions or in dislike of closer control by France. In all respects they were minor affairs.

The Consolidation of French Rule. The original treaties, of which the French negotiated some 130 between 1785 and 1891 with the chiefs of Senegal, dealt with trade only. They fixed the rents and rates payable by each individual trader, and usually gave subsidies to the chiefs in return for their goodwill. These treaties did not attempt to deal with the internal administration of the tribes or with their foreign relations. The next stage was a treaty of friendship and protection, in which the native state was free to conduct its own affairs, subject only to the general guidance of French Residents.

At this stage no French taxation was imposed. Faidherbe was the first to insist that the election of any chiefs must be subject to his approval, and from this time onwards the French hold gradually grew tighter. As the French historian Sabatié has put it:

‘These treaties guaranteed the political organization, the religion, customs, institutions, and laws of the native country concerned. They were designed to ensure the security of our commerce and respect for the property of our nationals and our subjects, and they stipulated, by way of compensation, the collection of certain taxes on cattle and exported products for the benefit of chiefs. As a result of the evolution of the colony and its economic and administrative necessities, the clauses and obligations of these treaties have lapsed.’

The system lasted until towards the end of the nineteenth century; but from that time onwards native powers, especially over judicial matters, land, and tribute, have been gradually curtailed. Native chiefs have become agents appointed by the Government, and native administrative institutions have almost everywhere been deliberately abolished. This policy has its roots not only in administrative convenience but also in a strong sense of duty to the individual native and a desire to protect him from misrule.

The Modern Constitution

Until 1920 the four communes of Dakar, Goree, Rufisque, and St. Louis were described as the territory under direct administration, the remainder of the colony as a protectorate. In that year the distinction, which had long been one without a difference, was formally abolished.

Senegal, being the oldest colony, contains about a quarter of the whole European population of French West Africa. It also contains a larger proportion of educated and politically minded natives than the other colonies, and its constitution is more democratic. This last fact is mainly due to the equalitarian doctrines of the July Monarchy at the time when the personal status of Senegalese native citizens and their rights as Frenchmen were determined. In 1833 the French Parliament enacted that any person born free, or having legally acquired his liberty, enjoyed in the French colonies both civil and political rights under conditions prescribed by law. In 1848, therefore, when the colony first acquired the right to send a deputy to the French Parliament, natives born in the French settlements of Goree, Rufisque, and St. Louis, the only French soil in Senegal at the time, became entitled to the Parliamentary vote and to all the

other privileges of French citizenship. In due course the same status was conferred on natives of Dakar, and in 1916 French citizenship was extended not only to natives born in these four communes but to their descendants also. It thus came about that out of 80,500 native citizens in the whole of French West Africa 78,000 live in Senegal or Dakar. Of these the great bulk resides in the four old communes.

Municipal government, on entirely metropolitan lines, was conferred upon St. Louis and Goree in 1872 and upon Rufisque in 1880. In 1887 Dakar, which had hitherto formed part of Goree, was separated from it, receiving its own elected mayor and council, and in 1929 absorbed its parent. The District of Dakar was separated from Senegal in 1924, and received its own Administrator, directly responsible to the Governor-General.

Parliamentary representation was suspended under Napoleon III, but restored in 1870. Until 1914 a European had been elected, but the racial issue was deliberately raised in that year, when M. Blaise Diagne, a Sérére, entered on his long term as Deputy for Senegal. He thoroughly justified his race by heading a campaign for voluntary recruitment in Senegal during the War of 1914-1918, and subsequently held office as Under-Secretary of State for the Colonies. As early as 1879 the General Council was elected by the citizens of the four communes. It had certain powers of taxation and legislation over the four communes, powers which, though limited, were more democratic than in other parts of French West Africa. Its greatest influence, however, lay in the criticism of the Government, a function which, withheld from it by law, sprang naturally from the power of taxation. When the formal distinction between colony and protectorate disappeared, the General Council gave place to the existing Colonial Council (p. 432), a body with generally similar powers extending over the whole colony.

Senegal and Federation. Before 1845 and again from 1859 to 1893 the whole of what is now French West Africa was administered by the Governor of Senegal. It was natural, therefore, that in 1895 he should be appointed Governor-General of the Federation, with its not very precise constitution. This appointment was welcomed in Senegal, as it enhanced the colony's supremacy. In 1902 the Governor-Generalship was made a separate office, and Senegal sank to the level of the other colonies. This new arrangement, although a blow to the pride of the Senegalese, did not touch their pockets. They still kept control of their own revenues, out of which they voted a sum

to the Federal Government. In 1904, however, when the distinct Federal budget was instituted, custom duties were lost to the various colonies. The General Council of Senegal protested vigorously. Its spokesmen said that the Federal Government had taken away 78 per cent. of the colony's revenue and only assumed 39 per cent. of its expenditure. So strongly did the Council feel on the question that it impugned the validity of the federal financial arrangements before the Council of State at Paris. This latter body, as was to be expected, confirmed them in 1908, but the Senegalese have never fully accepted the new system. In 1929, for example, it was stated that Senegal was contributing half the customs revenue of French West Africa, though containing only one-tenth of its population. Moreover, despite its democratic Colonial Council, the colony has no more direct influence in federal affairs than Mauritania. Even to-day protests are still heard periodically against the financial system of the Federation and its alleged encroachments on the sphere of the Colonial Government.

Christianity

The first definite record of a Christian mission is that of the French Capuchins, who sailed from Dieppe in 1635. They divided into two parties: one, under Pères Alexis and Bernardin, landed at Rufisque, where they were entertained by Portuguese Christians. During their stay they baptized 27 natives. The other party landed at St. Louis, where there was not yet a permanent French settlement, and met with misfortune. Some of them died, and the survivors joined their brothers at Rufisque. The Protestant Dutch made life impossible for them, and the whole party returned to France. Though from time to time priests of the Society of the Holy Spirit (founded in 1726 to train missionaries for the French colonies) visited Senegal, no serious missionary effort seems to have been made till after the Peace of Paris, when the first Prefect Apostolic was appointed to St. Louis.

The first nuns to work in Senegal were of the community of St. Joseph of Cluny. These were sent out in 1819 to St. Louis at the request of the Governor to undertake nursing and education. The community established two schools in St. Louis and one in Goree in 1826.

In 1846 the first mission was founded at Dakar, which the same year became the seat of the Vicar Apostolic of the Two Guineas. These missionaries belonged to the Society of the Sacred Heart

with which the Society of the Holy Spirit was united in 1848. About the same time a house of the Sisters of the Immaculate Conception (the Blue Sisters) was established at Dakar, which has been the Roman Catholic metropolis of French West Africa ever since.

In 1906, on the separation of Church and State in France, the government subsidies to the Roman Catholic missions were withdrawn. In 1930 the Roman Catholics in Senegal had 67 European priests, sisters, and lay workers aided by 175 native catechists and teachers. Professing Roman Catholics numbered 22,300. A magnificent cathedral, the work of many years, was consecrated at Dakar in 1936.

The only Protestant mission in Senegal is that of the Société des Missions Évangéliques de Paris, which began work in the colony in 1863. Its adherents number about a hundred.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

Senegal

SENEGAL is the third most densely populated colony, with an average of 21.58 persons per square mile and a total population in 1937 of 1,666,374. The distribution, however, varies greatly within the colony itself. The regions of Fouta and Ferlo are almost uninhabitable, while the provinces of Baol, Sine-Saloum, and Thiès have more than 50 persons per square mile. The coastal provinces of Bignona and Ziguinchor, south of the Gambia, are equally closely settled. The left bank of the Senegal, roughly from Bakel to Podor, supports a fairly dense agricultural population.

Growth has been steady, the figures for 1921, 1926, and 1931 being 1,225,523, 1,318,287, and 1,584,273 respectively. There is no doubt that the colony is capable of supporting many more inhabitants than it does at present.

Natives. More than 580,000 Ouolofs live in Senegal. These are among the most energetic and intelligent peoples of the Federation, and they provide the bulk of the famous Senegalese Tirailleurs. There are about 250,000 each of Sérères, Mandingos, and Fulani, and 150,000 Toucouleur. Broadly speaking, the Ouolofs live north and east of Dakar, the Sérères south-east thereof, the Toucouleur

near the Senegal river, the Fulani in the centre of the colony, and the Mandingos in the east of it.

The District of Dakar

The 66 square miles of the District of Dakar contain 126,929 persons; but the figures for density per square mile mean even less than elsewhere, since most of the inhabitants live in the town itself.

In 1937 there were 118,459 natives and 8,470 Europeans, of whom 6,728 were French. This was about a quarter of the total of Europeans in the whole Federation.

INLAND TOWNS

BAKEL ($14^{\circ} 52'$; $12^{\circ} 24'$ W.) Population, 2,103. Provincial headquarters. Medical post. Landing-ground. Regional School. Garage. Daily market.

Bakel is on the left bank of the Senegal (Plate 83) where the river passes between cliffs some 17 miles below the entrance of the Falémé. It is a local market for gum, ground-nuts, grain, gold dust, hides, and ostrich feathers. Most of the inhabitants are Moslems.

By river it is 531 miles from St. Louis and 84 miles from Kayes, and there is a fortnightly steamer service when the water permits. By colonial road Bakel is 386 miles from St. Louis, 93 miles from Matam, and 32 miles from Kidira. A bus service connects all these places. The river can be crossed by ferry, and from the Mauritanian bank a poor track leads to Sélibaby (32 miles).

BAMBEY ($14^{\circ} 40'$; $16^{\circ} 25'$ W.). Altitude, 59 feet. Population, 4,209. Mixed Commune. Dispensary. Police station. Meteorological station. Landing-ground. Garage. Agricultural experimental station. Daily market.

Set in the midst of an area of dense population, Bambey is a prosperous market town. The main product of the locality is ground-nuts, and large quantities of these are put on the train each year. They also form the chief speciality of the agricultural experimental station.

Communications. By railway Bambey is 77 miles from Dakar, $33\frac{1}{2}$ miles from Thiès, 17 miles from Diourbel, and 319 miles from Kidira. It is on the intercolonial road, being 49 miles from Thiès and 16 miles from Diourbel. A colonial road goes almost due south to Fatik (27 miles). There is a daily bus service (p. 473) to Fatik, Foundiougne, and Kaolack.

BIGNONA ($12^{\circ} 49'$; $16^{\circ} 16' W.$). Altitude, *c.* 60 feet. Population, 1,611. Provincial headquarters. Medical post. Military post. Emergency landing-ground. Garage.

Bignona stands on the left bank of a small and marshy tributary of the Casamance. Canoes carry a certain amount of merchandise, as also do lorries. The principal items of trade are ground-nuts, palm kernels, wax, rice, and fruit. Most of the native inhabitants are Dioulas.

Colonial roads lead south to the Casamance opposite Ziguinchor (16 miles), east to Sedhiou (58 miles) and Kolda (120 miles), and north-west to Diouloulou (35 miles) and the frontier of the Gambia (46 miles). There are also several minor roads and tracks.

DAGANA ($16^{\circ} 27'$; $15^{\circ} 34' W.$). Altitude, 13 feet. Population, *c.* 3,500. District headquarters. Medical post. Emergency landing-ground. Regional School. Race-course.

Dagana is on the left bank of the Senegal, and its chief economic function is as a market for Mauritanian gum. This is shipped down river to St. Louis, 116 miles away. There is also connexion upstream to Podor (61 miles), Bakel (403 miles), and Kayes (487 miles).

By colonial road Dagana is 86 miles from St. Louis and 332 miles from Kidira. It is on the bus service (p. 474) between these two places. Southwards another colonial road leads across sparsely inhabited country to Dahra (89 miles) and Diourbel (162 miles). From the opposite bank of the Senegal a track goes to Mederdra, some 30 miles distant.

DIOURBEL ($14^{\circ} 39'$; $16^{\circ} 10' W.$). Altitude, 39 feet. Population, 15,442. Mixed Commune. Provincial headquarters. Medical post. Police headquarters. Emergency landing-ground. Power station. Hotel. Garage. Daily market.

This flourishing town lies across the little Sine river in the middle of a well-cultivated shallow valley. To the north the ground rises somewhat. Diourbel owes its prosperity to ground-nuts, and 100,000 tons of them pass through the town every year. There are several factories for the shelling of the nuts and for the expression of their oil. Besides this, Diourbel is the headquarters of the province of Baol and a route centre. Its inhabitants are mainly Moslems, who have a large and important mosque. There is also a special school for sons of chiefs.

The electric power station has a gas-engine plant that burns the residue from ground-nut presses.

Communications. Diourbel is the railway junction for Routes 3 and 4. By the former it is $50\frac{1}{2}$ miles from Thiès and 302 miles from Kidira, and by the latter it is 31 miles from Touba. The intercolonial road leads westwards to Thiès (65 miles) and Dakar (109 miles) and south-eastwards to Kaolack (40 miles), Tambacounda (230 miles), and Nayas (351 miles). Colonial roads go north-eastwards to Dahra (73 miles) and Dagana (162 miles) and south-westwards to Fatik (25 miles) and Kaolack (53 miles).

LOUGA ($15^{\circ} 37'$; $16^{\circ} 16'$ W.). Altitude, 128 feet. Population, 4,390. Mixed Commune. Provincial headquarters. Medical post. Barracks. Police headquarters. Landing-ground. Regional School. Power station. Garage. Race-course. Agricultural experimental station and farm school. Daily market.

Louga is the scene of the most important cattle market in the whole colony. It is this that has made it a route centre. Other local products are ground-nuts, gum, and millet. Administratively, Louga is the headquarters of the province of the same name and also a military headquarters.

Electricity is supplied by an oil-driven plant.

Communications. Louga stands at the junction of railway routes 1 and 2, being 119 miles from Dakar, 44 miles from St. Louis, and 81 miles from Linguéré. It is on the intercolonial road from Dakar (121 miles) to St. Louis (47 miles). A colonial road runs eastwards across the colony to Dahra (59 miles), Linguéré (84 miles), and Matam (242 miles). There are also minor roads and tracks.

PODOR ($16^{\circ} 35'$; $15^{\circ} 02'$ W.). Population, 3,168. Provincial headquarters. Medical post. Emergency landing-ground. Regional School. Garage. Daily market.

This riverside town is chiefly important for gum arabic. The gum is brought by the Arabs, sold in the market, and shipped down the Senegal to St. Louis.

Communications. By river Podor is 178 miles from St. Louis and 437 miles from Kayes. Throughout the year the Messageries Africaines run a fortnightly service to and from St. Louis. From July to January the boats also go upstream as far as Matam (234 miles) and in August and September to Kayes. Podor is on the colonial road, being 135 miles from St. Louis and 288 miles from Nayas. There is a ferry across the river to connect with tracks to such Mauritanian

towns as Boutilimit and Aleg. There is also a track that runs south-south-westwards to Yang-Yang. For half the year there is a bus service twice a week to St. Louis in one direction and to Kidira in the other.

TAMBACOUNDA ($13^{\circ} 45'$; $13^{\circ} 39'$ W.). Altitude, 148 feet. Population, c. 4,000. Provincial headquarters. Medical post. Police headquarters. Landing-ground. Wireless station. Hotel. Garage.

On a slight eminence above a marshy tributary of the Sandougou, Tambacounda is of considerable importance as a route centre. It is not only a road junction but also the most southerly point in Senegal of the Dakar-Niger railway. Near the town is a sisal plantation.

The hotel is open only from December to May.

By rail Tambacounda is 285 miles from Dakar, 111 miles from Kidira, and $170\frac{1}{2}$ miles from Kayes. One intercolonial road runs westwards to Kaolack (188 miles), Thiès (295 miles), and Dakar (339 miles); another north-eastwards to Nayas (121 miles) and Kayes (176 miles); and a third southwards to Diabougou (25 miles) and ultimately to Labé (288 miles). Before the war Tambacounda was connected to Dakar and Bamako by a weekly air service operated by Air France.

THIÈS ($14^{\circ} 49'$; $16^{\circ} 52'$ W.). Altitude, 207 feet. Population, 15,451. Mixed Commune. Provincial headquarters. Medical post. Barracks. Police headquarters. Landing-ground. Regional School. Roman Catholic mission. Power station. Hotels. Garages. Railway workshops. Cinemas. Daily market.

Since the opening of the railway in 1885 Thiès has grown from a collection of native huts to a large town. The railway workshops employ many hundreds of men, and the market handles considerable quantities of ground-nuts. The town has been built on a slope that declines gently east and north-east to a small stream. The old Fort Faidherbe is still standing, and there is a big Roman Catholic church.

Communications. Thiès is a railway junction, being $43\frac{1}{2}$ miles from Dakar, $119\frac{1}{2}$ miles from St. Louis, and $352\frac{1}{2}$ miles from Kidira. It is also a meeting-place of intercolonial roads. One of these comes from Dakar (44 miles) and goes on to St. Louis (124 miles), while the other branches east to Kaolack (107 miles), Nayas (416 miles), and Kayes (471 miles). There are several minor roads, notably one going south to M'Bour. Along this road there is a regular bus service, with two buses each weekday in either direction.

9. ADMINISTRATION

DAKAR, the capital of the Federation and the residence of the Governor-General, is geographically in Senegal, and from its foundation in 1863 it was administered by the Governor of Senegal as part of that colony. By the decrees of 25 October and 27 November 1924, however, the District of Dakar was, without prejudice to its municipal institutions, made a separate administrative unit, under an Administrator directly responsible to the Governor-General. Only Dakar and Goree were originally included, with an area of 60 square miles, but the Commune of Rufisque was added by a decree of 9 June 1937. The District now has a population of 127,000, and it has its own budget.

Senegal returns a deputy to the French Chamber of Deputies, who is elected by French citizens (European or native) resident in the colony and in Dakar. The deputy is *ex officio* Senegal's representative on the Supreme Council of the French Colonial Empire.

Councils

Executive Councils. The Executive Council of Senegal is composed of the Governor, the Secretary-General, the Attorney-General, the officer commanding the troops, one French citizen elected by the Chamber of Commerce of St. Louis, and one citizen and two subjects nominated for two years by the Governor-General.

It is a purely advisory body, but the Governor is bound to consult it on such matters as the Colonial Budget, proposed changes in taxation, disposal of government property, and concessions. He may indeed, require its advice on any matter he chooses.

The Executive Council for the District of Dakar was at one time composed of the Standing Committee of the Governor-General's Council together with the Administrator. This arrangement, legalized in 1924, was changed by a decree of the 9 June 1937 which gave Dakar its own Executive Council, composed of the Administrator, Deputy-Administrator, the officer commanding the troops at Dakar, the Attorney-General, one member of the Chamber of Commerce appointed by that body, two municipal councillors of Dakar and one of Rufisque appointed by their respective councils, and one French subject appointed by the Governor-General.

The Council has the same functions as that of the colony, but its decisions need the approval (usually formal) of the Standing Committee of the Governor-General's Council.

The Executive Councils of Senegal and of Dakar are known as *conseils privés*, whereas those of the other colonies are known as *conseils d'administration*.

The Colonial Council of Senegal. The history of the Colonial Council and of its predecessor, the General Council, has been given above. The earlier council had jurisdiction over the four full communes only, but its successor, which dates from 1920, when all distinctions between colony and protectorate were abolished, has jurisdiction over the whole colony. The inhabitants of the District of Dakar still retain their votes for the Colonial Council, and as a corollary the Council can discuss the affairs of the District. The pretext for this decision was afforded by the provision, in the decrees of 1924, that the Colonial Budget of Senegal should contain a grant in aid of Dakar; but French writers do not disguise the fact that it was thought not desirable entirely to divorce the District from the rest of Senegal. The decrees of 1924, therefore, expressly left it an integral, though autonomous, part.

The Colonial Council is unique in French Africa in that its membership includes Europeans, natives, chiefs, citizens, and subjects. It is, therefore, worthy of detailed mention. Its constitution and powers are laid down in a decree of 4 December 1920, as amended by decrees of 30 March 1925, 13 January 1930, and 8 April 1939. This last added the subjects. The colony is divided into four electoral districts, from which members are elected on a population basis. The Council is elected for a term of six years, but, on the recommendation of the Governor, it may be dissolved by the Governor-General. Should a dissolution occur, a new election must be held within three months. There are 62 members in all: 26 citizens elected by citizens, 18 provincial or canton chiefs elected by those of the same rank, and 18 native subjects. These subjects must either have been born in the colony or be descendants of subjects born in the colony; they must have completed their military service; and they are elected by all other subjects who fulfil the same conditions. In 1929 the European element only numbered one-fifth of the total membership, and the additions made in 1939 will have had the effect of swamping it.

The Council meets for a fortnight's session once a year, but it can be summoned by the Governor at any time. It chooses its own



113. Senegal: a Council of Notables



114. *St. Louis*



115. *St. Louis: the North Quay*

president, but the Governor has the right of addressing it and of deputing high officials to speak to it of the work of their own departments. It appoints a Standing Committee, which can meet to trans-

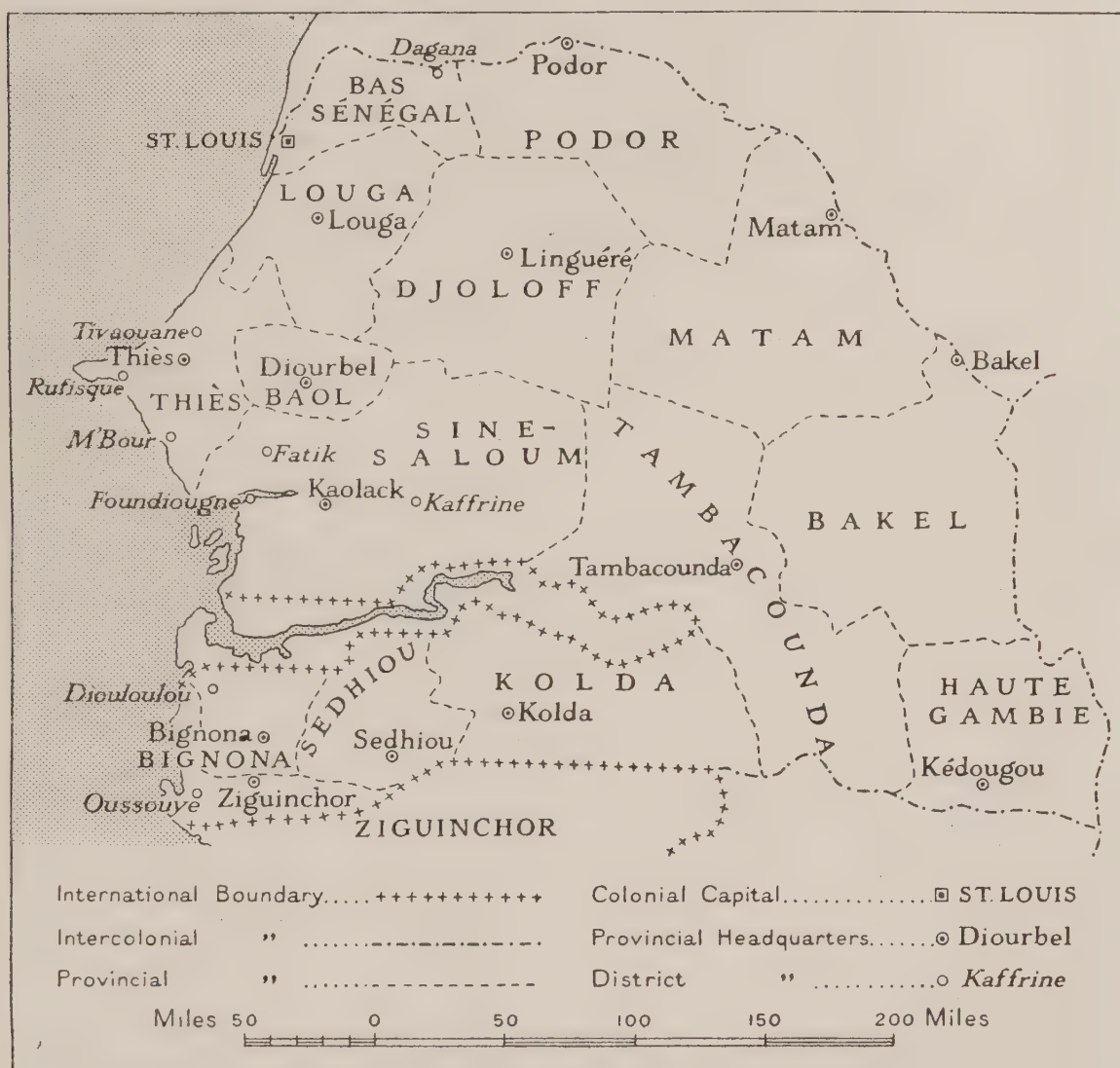


FIG. 52. Senegal: Administrative Divisions

act business when the full Council is not in session. It is bound, however, to report to its parent body.

The Council's powers are wide. It must be consulted on a proposal to create new communes, and it may advise on any matter put before it by the Governor. It may legislate on eight stated topics, which are chiefly concerned with the management of state property and with the colony's financial contributions to the public works of the Federation. This legislation comes into force within two months, unless previously vetoed by the Governor-General. The Council also has the right to deliberate the assessment and collection of

taxes and all items of the Colonial Budget not fixed by the Governor-General.

Article 40 of the decree of 1920 forbade any deliberation of political matters and any resolution concerning them. The power to discuss the budget, however, has nullified this prohibition, and criticism of the Government plays a considerable part in the Council's debates. The citizens are usually more independent than the chiefs, since the latter owe their appointments to the Governor. It is too early to judge the effect of the recent addition of subjects.

It will be clear from the foregoing that this Colonial Council performs a very useful function. Although it cannot bring the machinery of government to a standstill, it can seriously hamper the administration. In consequence Senegal has a greater tincture of democracy than any other colony.

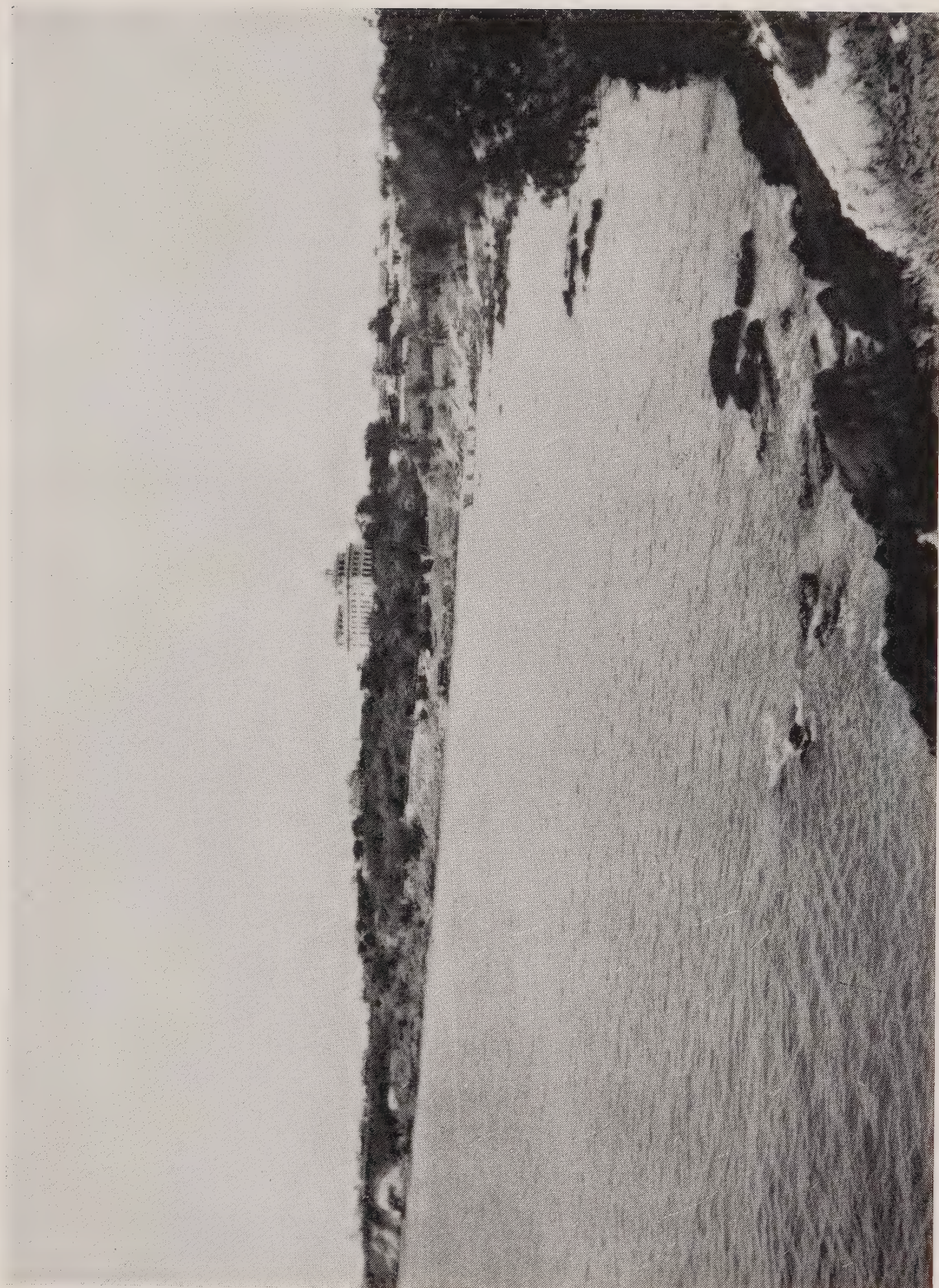
Territorial Divisions

The colony is divided into fifteen provinces (Fig. 52), some of them subdivided into districts. Their names and the names of their headquarters towns are as follows.

<i>Province</i>	<i>Headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Bakel	Bakel	8,755	..
Baol	Diourbel	1,714	..
Bas Sénégal	St. Louis	2,351	Dagana
Bignona	Bignona	1,699	Diouloulou
Djoloff	Linguéré	6,275	..
Haute Gambie	Kédougou	5,212	..
Kolda	Kolda	5,599	..
Louga	Louga	3,886	..
Matam	Matam	10,116	..
Podor	Podor	4,857	..
Sedhiou	Sedhiou	2,703	..
Sine-Saloum	Kaolack	10,228	Fatik, Foundiougne, Kaffrine
Tambacounda	Tambacounda	9,998	..
Thiès	Thiès	2,707	M'Bour, Tivaouane
Ziguinchor	Ziguinchor	1,120	Oussouye

The four provinces of Bignona, Kolda, Sedhiou, and Ziguinchor are grouped together as the Casamance Territory, at the head of which is a Session Administrator, or Chief Commissioner, residing at Ziguinchor.

In almost all provinces the provincial Commissioner is assisted by a Council of Notables (Plate 113).



116. *Dakar: Bernard bay*



117. Dakar: the Mairie

Municipal Government

Full Communes. Dakar (including Goree), St. Louis, and Rufisque are full communes (Vol. I, p. 258), the only ones in the Federation.

The Municipal Councils, which choose their own mayors, consist of from fifteen to eighteen members. These are elected for terms of four years by the French citizens of their towns, and since 1910 all the councils have had African majorities. At first these communes had powers as extensive as their counterparts in France, and they were responsible for police, public health, roads, markets, lighting, and elementary education. In 1918, however, the colonial authorities took over public health at St. Louis and at Dakar, and in 1927 at Rufisque. Similarly, in 1924, the creation of the District of Dakar was made the occasion to subtract police and roads from the commune. The same process, without the same excuse, went on in 1927 for St. Louis and for Rufisque. For all these services the municipalities still make financial contributions.

Their revenue comes from direct government grants, from municipal rates, and from municipal undertakings. Altogether they include market dues, liquor licences, lighting, and a proportion of the business licences and other colonial taxes. In normal years the revenue of Dakar averaged some 8,000,000 francs, of St. Louis 7,750,000 francs, and of Rufisque 5,600,000 francs.

In each case the budget is drawn up by the mayor, passed by his council, and submitted to the Governor or Administrator.

Mixed Communes. There are fifteen mixed communes in Senegal, namely Bambey, Bargny-Gouddou, Diourbel, Fatik, Foundiougne, Gossas, Kaolack, Kébémér, Kombole, Louga, M'Bour, Mekhé, Thiès, Tivaouane, and Ziguinchor. Thirteen of them are mixed communes of the first degree, but since 1925 Kaolack and Ziguinchor have been mixed communes of the second degree.

Chambers of Commerce. There are Chambers of Commerce at Dakar, Kaolack, St. Louis, Thiès, and Ziguinchor. The one at St. Louis is the successor of a Committee of Commerce which was set up in 1825. The Chamber at Thiès is also known as the Chamber of Cayor-Baol. It was first founded at Rufisque in 1883, but in 1937, when that town was included in the District of Dakar, it was moved to its present headquarters.

In Senegal there are no separate Chambers of Agriculture and Industry, but the Chamber of Commerce at Dakar has a section, established in 1930, devoted to those two activities.

Courts of Law

The Court of Assize sits at Dakar, and the Tribunals of First Instance sit at Dakar, Kaolack, and St. Louis. There is a Magistrate's Court at Ziguinchor, and there are Moslem Courts at Dakar, Rufisque, and St. Louis. In each province and full commune there are the usual native courts, and the Colonial Court of Appeal for Senegal sits at St. Louis. There is a separate one for the District of Dakar.

In addition to the local courts, the West African Court of Appeal and the Supreme Native Court of Appeal are both held at Dakar.

Native Organization

All the old chiefdoms and kingdoms have now disappeared. On the other hand, owing to their representation on the Colonial Council, chiefs in Senegal to-day exercise greater influence than in other colonies. They are appointed and paid by the Government, and they can usually be relied on to supply an official majority. In 1925 they induced the Government to raise their salaries, which now range from 7,600 francs to 36,500 francs per annum. The chiefs are divided into no less than twelve grades. Most of them have been educated at the École des Fils des Chefs et des Interprètes at St. Louis.

Land Tenure

By 31 December 1937 provisional concessions had been granted over an area of 12 square miles and concessions over 15 square miles. By the same date there had been granted under the immatriculation system 9,630 certificates of title, covering 177 square miles. Under the process of Confirmation of Native Land Rights, 40 certificates had been granted, covering $3\frac{1}{2}$ square miles. These figures are very small for the size and population of the colony.

Labour

The Colonial Council is responsible for the fact that forced labour has been redeemable by every person since 1921. This reform did not become universal in the Federation till several years later. In 1930 a resolution of the same council compelled owners of motor vehicles to lend them for work under the same system.

In 1935 there were 408,000 persons on the forced labour rolls, 1,415,000 man-days were worked, and 561,300 francs were paid in

redemption money. During 1936 official figures showed 1,000 labourers working under written contracts for private concerns, while 31,800 were working on verbal agreements. For public services there were only 20 working with written contracts and 8,900 without. These figures apply only to regular employment, and they take no account of casual labour of any kind.

The fertile provinces of Baol and Sine-Saloum annually attract thousands of immigrant labourers from French Sudan to grow ground-nuts. It is estimated that, in some years, as many as 60,000 Sudanese labourers (*navétanes*) cross the border, encouraged by cheap fares on the railways and advances of pay from the Chambers of Commerce. In 1932 these advances amounted to 300,000 francs. On their arrival they do not work for daily hire, but each labourer takes up a plot for the season. The landowner provides the seeds, and also board and lodging for the labourer. In return the labourer works on the owner's plot for two, three, or four days a week. At the close of the season the proprietor takes either one-tenth of the crop or double the quantity of seeds that he supplied, leaving the rest of the crop to the labourer. Most labourers return to their homes at the end of the harvest, but occasionally they stay on till they have accumulated the sum they set out to acquire.

Agriculture

The first director of agriculture of Senegal may be said to have been Richard, one of the survivors of the *Méduse*. Under him experimental gardens were founded at Richard Toll about 1820. These are still in existence. The present organization of the Department of Agriculture is laid down by an order of 22 January 1932. Working in close contact with local administrative officers, it manages experimental gardens and farm schools, gives information and instruction to farmers, conducts campaigns against agricultural pests, and organizes agricultural shows. The Department has a laboratory at Hann and an experimental station at Bambey. This was opened in 1924 and is devoted principally to the study and improvement of ground-nuts. Besides these institutions the Department owns various smaller stations for study, experiment, and instruction.

Forestry. The Department of Agriculture had charge of forestry until an order of 10 February 1937 created a separate Forestry Department and divided the colony into four forestry districts (*inspections*), with headquarters at St. Louis, Thiès, Ziguinchor, and Tambacounda respectively.

Produce Inspection. Produce inspection is entrusted to a board nominated by the Chambers of Commerce, but the Government keeps a tight control by exercising a veto on all important appointments to its staff. The Board's inspectorate has very wide powers of inspection over produce, whether destined for local consumption or for export. No produce to which inspection applies can be sent out of the colony without a certificate of purity.

For this inspection a special tax of 5 francs per ton on ground-nuts and palm kernels, and 20 francs per ton on rubber, is imposed on produce intended for export.

Native Provident Societies. There are 14 Native Provident Societies. Bignona and Ziguinchor have combined, but otherwise there is one to each province. In 1937 they had 1,200,000 members, whose annual subscriptions varied from 2.50 francs to 5.00 francs each, and their expenses were some 25,000,000 francs. They supplied over 44,000 tons of ground-nut seeds to their members.

In earlier days the Sine-Saloum society imported stallions from the Argentine for the breeding of mules, and in 1932 the societies devoted nearly 250,000 francs to the purchase of motor vehicles. In cattle-breeding districts they supply breeding stock and improve water-supply and pasturage. By 1933 it was estimated that the societies had sunk over 1,200 wells, while the society of Thiès had constructed a barrage for irrigation purposes.

In addition to strictly agricultural activities, the Senegal societies help their members by advances of cash, which are made not only to meet failure of crops, but also in cases of individual accident or illness.

Mining

At the end of 1937 the following permits were in force:

Personal licences	.	.	.	.	.	.	.	4
The Occupation System								
Exclusive licences	.	.	.	.	.	.	.	10
Mining licences	.	.	.	.	.	.	.	32
Concessions	.	.	.	.	.	.	.	16
								—
								58
Total	.	.	.	.	.	.	.	62

Education

The first attempts to educate the natives of French West Africa were made in Senegal, and they were also remarkable for being instituted, not by missionaries, but by the Crown. Colonel Schmaltz

took with him a lay schoolmaster, who opened a school for boys at St. Louis in 1817. Its pupils varied in number from 60 to 100, and it continued under state and lay control until 1841. In that year its management was handed over to Roman Catholic priests, while the Government undertook to maintain the school and to pay for its equipment and the salaries of its teachers.

Girls' education dates from 1826, when the Sisters of St. Joseph of Cluny founded schools at St. Louis and Goree.

By 1854 there were four schools in Senegal. They all belonged to Roman Catholic missions supported by government grants, and they counted only 590 pupils on their rolls. There were difficulties regarding the admission of Moslems to these schools and, as Islam was the prevailing faith, the spread of education was hindered. In 1857 Faidherbe opened a Moslem School at St. Louis, and until 1903 this remained the only lay primary school in Senegal. By 1898 there were 9 primary schools in the four communes and about 30 in the protectorate. These were staffed by interpreters and non-commissioned officers, and their existence was spasmodic. At that time elementary education throughout French West Africa was mainly in the hands of the missions, and, so far as the Government took any interest in it at all, it was organized by local regulations in each colony. The Governor-General's order of 24 November 1903 set up a uniform system of state-controlled education throughout the Federation.

In 1938 Senegal and Dakar had 132 European teachers and 337 native in Government schools and 48 teachers in recognized private schools. Pupils were arranged as follows:

	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total pupils</i>
GOVERNMENT SCHOOLS				
<i>Primary</i>				
Village schools . . .	72	5,946	241	6,187
Regional schools . . .	16	4,590	432	5,022
Urban schools . . .	10	3,392	752	4,144
<i>Higher Primary</i> . . .	2	158	14	172
<i>Technical</i>	4	146	0	146
	<u>104</u>	<u>14,232</u>	<u>1,439</u>	<u>15,671</u>
PRIVATE SCHOOLS				
<i>Primary</i>	13	1,164	293	1,457
Totals	<u>117</u>	<u>15,396</u>	<u>1,732</u>	<u>17,128</u>

There were also 2,295 Moslem schools giving rudimentary instruction to 16,190 pupils.

In 1927 apprentice courses in woodwork and metalwork were started in St. Louis and Kaolack by the Public Works Department for selected schoolboys between the ages of 13 and 16 years.

There is a number of educational institutions in Dakar of a higher grade than primary. These are the responsibility of the Federal Government and have been described in Volume I.

Health

Senegal is divided into thirteen medical districts, each of which is intended to be under the supervision of a European medical officer. There are 17 medical stations, each under a native auxiliary. There are also 16 maternity centres and 117 posts visited once a week by a medical officer.

In 1937 Senegal and Dakar had 3 major hospitals and 34 minor hospitals and dispensaries. These provided 394 beds for European patients and 1,805 for native. There were 80 European medical officers, 31 native auxiliaries, 30 midwives, 124 male nurses, and 21 female nurses.

In addition there were four travelling parties (*groupes sanitaires mobiles*). One of these specialized in fighting sleeping-sickness in the Casamance Territory, and the other three were concerned with more general sanitary and prophylactic measures.

The Pasteur Institute at Dakar, a federal concern, is justly famous. Some medical work is done by missionaries. Unofficial committees of the Croix-Rouge are concerned with infant welfare at Dakar, Diourbel, St. Louis, and Tivaouane.

In 1937 Senegal voted 12,000,000 francs for medical services and Dakar 11,000,000 francs.

10. PORTS

ST. LOUIS (16° 01'; 16° 30' W.). Population, 30,586, including 1,231 Europeans. Colonial capital of Senegal and of Mauritania. Full Commune. Headquarters of the province of Bas Sénégal. Custom-house. Law courts. Chamber of Commerce. Hospital and dispensary. Army headquarters and barracks. Police headquarters. Belgian Consulate. Meteorological station. Landing-ground. Wireless station. Lycée Faidherbe. École des Fils des Chefs et des Interprètes. Higher Primary and Technical Schools. Protestant and Roman Catholic missions. Bank of West Africa. Power station. Prison. Hotels. Garages. Race-course. Botanical gardens. Experimental plantation. Daily market.

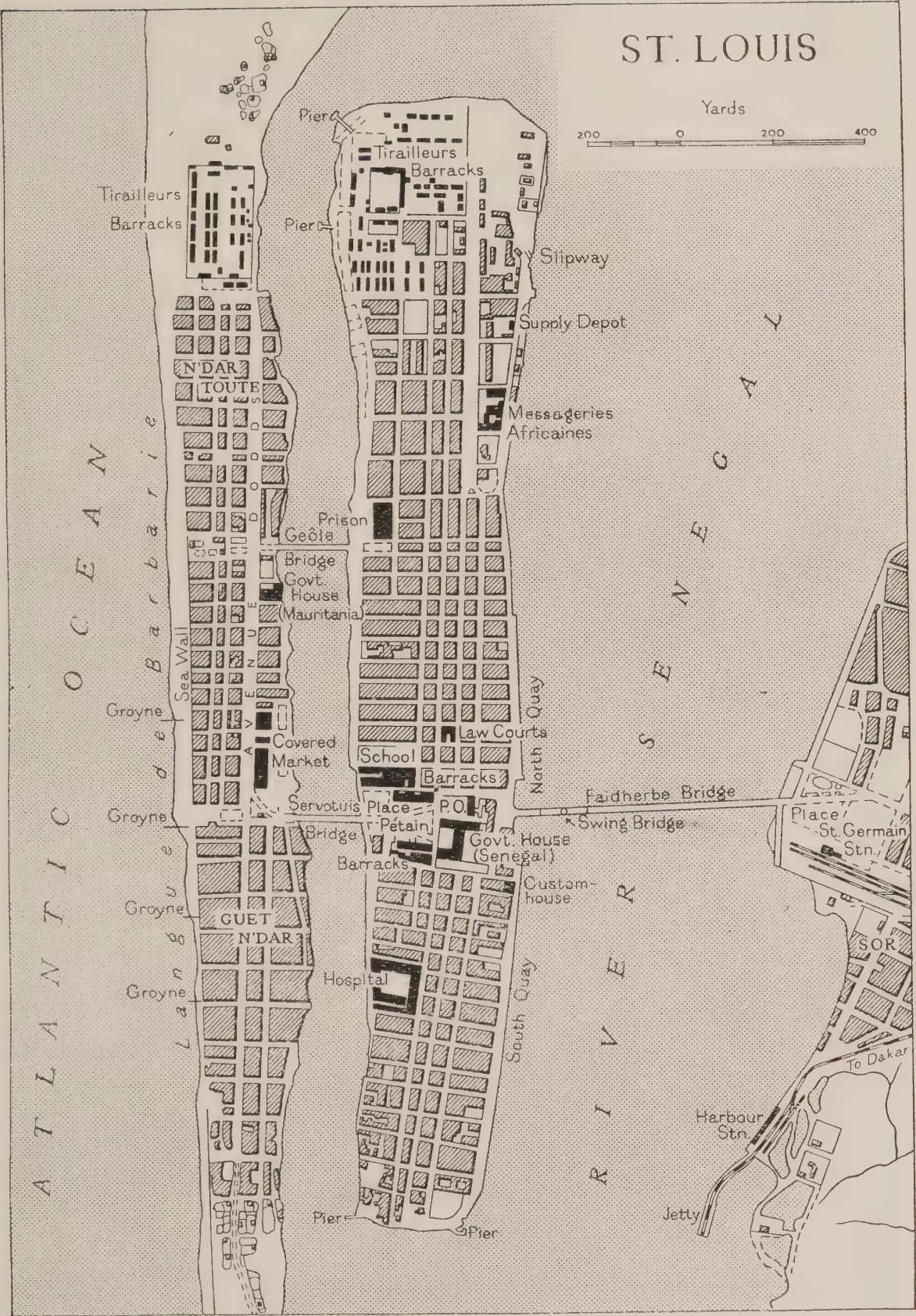


FIG. 53. *St. Louis*

The oldest part of St. Louis (Fig. 53) stands on an island in the estuary of the Senegal. This island is some 2,400 yards long and averages 350 yards in width, and its southern extremity is $13\frac{1}{4}$ miles from the mouth of the river. It has three main suburbs, N'Dar Toute and Guet N'Dar on the Langue de Barbarie, and Sor on the mainland.

History

Early navigators in search of the gold of Bambouk used the Senegal as a means of entry to the interior, and in 1658 a settlement was founded. This was the first French post in West Africa, and it was named after the patron saint of King Louis XIV. Its story has largely been told elsewhere, since, from the first, it played a prominent part in the general history of French West Africa as a whole and of Senegal in particular. The main events in the past were its capture by the British in 1759, its recapture in 1779, its second capture in 1809, and its final restoration to the French in 1817. During the eighteenth and nineteenth centuries it steadily grew in size and wealth, but in recent years it has been forced, both commercially and politically, to yield to Dakar.

The Town

The original island is now almost completely covered with buildings. These include Government House (Senegal), the Law Courts, the principal barracks, the power station, and the Roman Catholic church in the centre; the prison, two mosques, and another barracks to the north; and the hospital and another mosque to the south. N'Dar Toute has Government House (Mauritania) (Plate 92), the market, and yet another barracks, and Sor has the railway stations and the cemeteries. Guet N'Dar is inhabited almost entirely by natives.

The western arm of the river is crossed by two bridges. The Geôle Bridge, 150 yards long, connects the main town to N'Dar Toute, and it takes its name from the prison near its eastern end. Five hundred and sixty yards south of it is the Servotuis Bridge, the western end of which marks the dividing line between N'Dar Toute and Guet N'Dar. At the other end of it is an open space at present called Place Pétain. In a line with the Servotuis Bridge is the Faidherbe Bridge across the main stream. Built in 1900, this bridge is 570 yards long and has six fixed spans and a roadway 37 feet wide. Near its western end is a swing bridge with two openings each of

30 yards. Immediately east of it is the Place St. Germain, on the south-west side of which stands the main railway station.

The western side of the Langue de Barbarie has been reinforced by groynes and a sea-wall.

The town as a whole is well planned, and it has many shops and offices.

Trade

The chief exports are oil-seeds and skins. Imports are mainly manufactured goods. In 1937 the former weighed 30,400 tons and were valued at 31,600,000 francs (£253,990), and the latter weighed 8,300 tons and were valued at 11,900,000 francs (£95,640).

Description of Port

Anchorage. Outside the bar at the river mouth there is anchorage in 9–11 fathoms. Inside it there is again a depth of 11 fathoms, which gradually decreases until it is 5 fathoms just below Faidherbe Bridge.

Quays. The principal quays are on the east side of the island. North Quay (Plate 115), above Faidherbe Bridge, is 1,050 feet long, and South Quay, below it, is 1,770 feet long with an alongside depth of 12 fathoms. At the harbour station in Sor there is a jetty 600 feet long with a wharf at its head. There are four small piers on the island, whose positions are shown in Fig. 53.

Equipment. There is a steam crane some 600 yards above the North Quay and a slipway a little higher still. Minor repairs can be effected, but facilities are generally poor.

Fuel. A small stock of coal is kept, but no oil.

Communications

Rail. There are three railway stations (p. 467) in Sor, and the main station is the terminus of the line to Dakar (Route 1).

Road. The intercolonial road to Thiès (124 miles) and Dakar (168 miles) starts from the Place St. Germain and then turns south when clear of the goods station. At this point the Imperial road branches off north-east to Rosso (66 miles) and ultimately to Tindouf (1,315 miles). There is a bus service twice a week to and from Matam and Nayes.

Air. The airfield is $3\frac{1}{4}$ miles north-east of Place St. Germain. Its surface is hard clay and it has one hangar. In normal times there is a weekly Air France service to Dakar.

Wireless. The wireless station is to the south of Guet N'Dar.

River. Above Faidherbe Bridge the river is closed to all vessels not flying the French flag. Boats drawing 10 feet can ascend to Podor all the year round, and in the rainy season they can reach Kayes (Vol. I, p. 367). Table V shows how greatly river traffic on the Senegal has declined in recent years.

TABLE V. *Tonnage of Goods from Kayes*

	1928	1929	1930	1934	1935
Sent by rail or road	9,545	9,555	11,456	5,269	6,224
Sent by river	2,520	5,815	3,425	313	260

Shipping. There are no sea-going ships calling regularly, but the Messageries Africaines and the Messageries du Sénégal run services up-river.

DAKAR (14° 39'; 17° 25' W.). Population, 80,052, including *c.* 6,000 Europeans. Capital of the Federation and Headquarters of the District of Dakar. Full Commune. Custom-house. Law courts. Chamber of Commerce. Pasteur Institute. Hospitals. Naval base and dockyard. General Headquarters of the army in French West Africa. Police headquarters. British Consulate-General. Belgian, Brazilian, Czechoslovakian, Danish, Eireann, Greek, Italian, Netherlands, Norwegian, Swedish, and Swiss Consulates. Argentine, Finnish, Spanish, and Uruguayan Vice-Consulates. Meteorological station. Airport and seaplane base. Wireless stations. Colleges and schools. Protestant churches. Roman Catholic Vicariate Apostolic of Guinea and Vicariate General. Bank of West Africa. Banque Commerciale Africaine. Crédit Foncier de l'Ouest Africain. Banque Belge de l'Afrique. Power station. Prison. Public library. Hotels. Garages. Railway workshops. Cinemas. Race-course. Sports stadium. Botanical gardens. Agricultural experimental station. Daily market.

Dakar (Fig. 54) is approximately 2,600 miles distant from Southampton, from Cape Town, and from Rio de Janeiro. It is, therefore, well placed for taking a share in the trade of the South Atlantic, and it is small wonder that it has become the third port in the French Empire, being surpassed only by Marseilles and Le Havre. It is, moreover, of the first importance strategically.

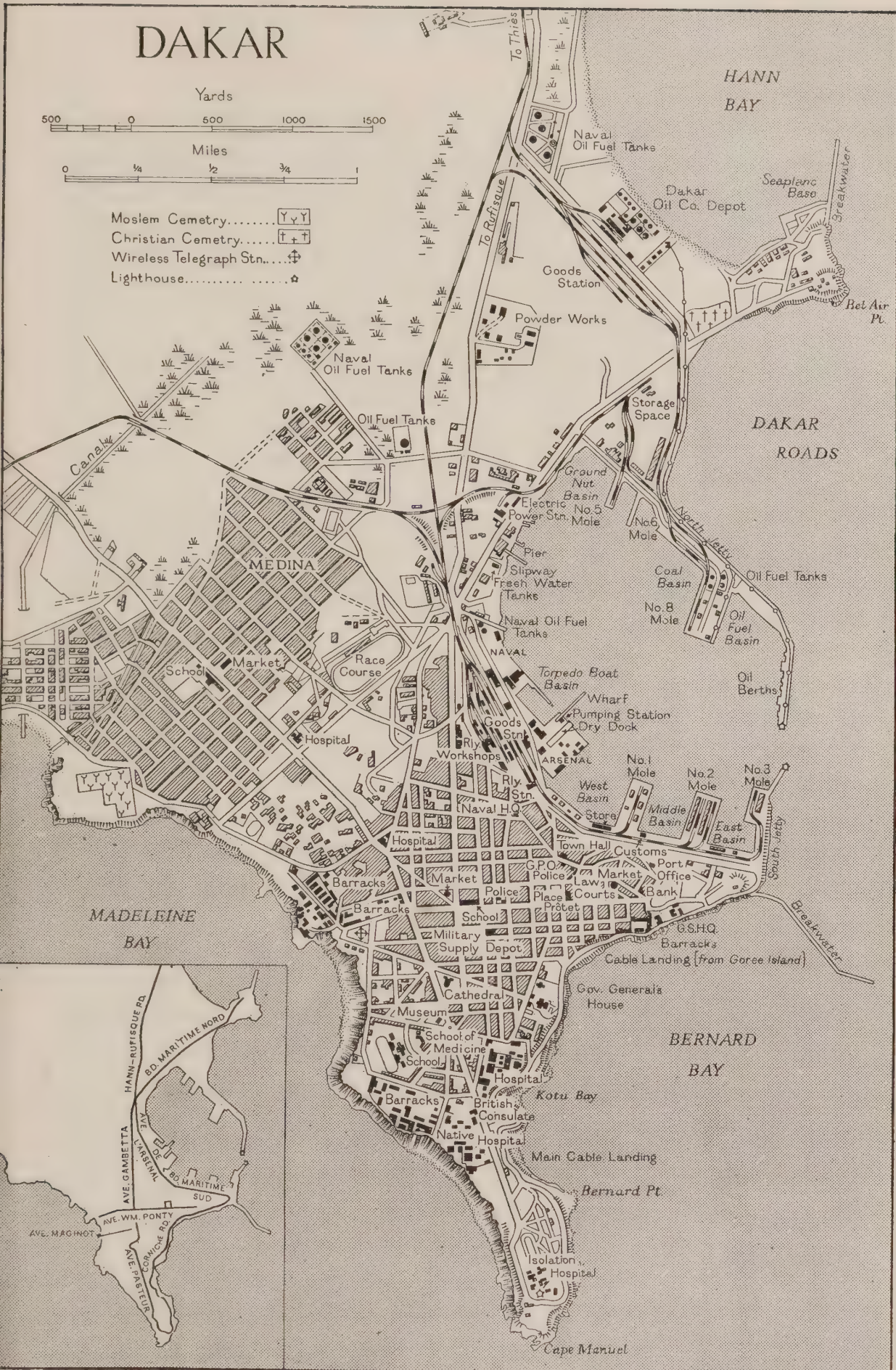


FIG. 54. Dakar

History

Until the middle of the nineteenth century Dakar was a Lebou village. In 1846, however, a Roman Catholic convent was built there, and eleven years later the village and the Cape Verde peninsula were officially occupied. In 1858 the French Government signed a contract with the Messageries Impériales (now the Messageries Maritimes) whereby ships sailing between Bordeaux and Rio de Janeiro would call at Dakar. The company acquired $7\frac{1}{2}$ acres of land near Dakar point, and in 1863 a small jetty was built. This was the beginning of the port. In 1864 a lighthouse was constructed near Cape Verde and three years later two others, respectively at Almadi point and at Cape Manuel. In 1885 the railway to St. Louis was opened. It was not, however, until 1898 that the idea was conceived of making Dakar a big naval base, and by 1910 it was capable of accommodating vessels of all types. Further improvements have since been effected, and to-day the dry dock is big enough to take a battleship.

The Town

Dakar has grown so as to cover the southern part of the Cape Verde peninsula, but the port is on the east side of the town. On the south-west are the cliffs of Madeleines bay and on the south-east those of Bernard bay. Dakar point marks the northern end of the latter. North of the port is Bel Air point, the southern limit of Hann bay.

The medina or native town, which contains nearly half the population, is to the north-west of the main town. The intercolonial road enters the latter from the north and is continued as the Avenue Gambetta and the Avenue Maginot to an open space where stands the Roman Catholic cathedral. East of the cathedral is the Residence of the Governor-General (Vol. I, Plate 58), magnificently situated on the top of the cliffs overlooking Bernard bay. Farther south are the British Consulate, the Pasteur Institute, the botanical gardens, and, almost at Cape Manuel, the isolation hospital. The buildings of the army headquarters are near Dakar point. West of them are the port offices, the telephone exchange, the principal market, the Mairie (Plate 117), and the law courts. The town contains innumerable shops and offices and many clubs, cafés, hotels, and other amenities of modern civilization.

Trade

Imports and Exports. Dakar is the outlet for almost the whole of French West Africa north of the forest. In particular it serves the most fertile and prosperous parts of Senegal and French Sudan. The principal export is, of course, ground-nuts, and others are gold, gum, shea butter, kapok, and hides. Imports include manufactured goods of all kinds, coal, oil fuel, wine, sugar, and flour. In 1937 imports totalled 1,298,700 tons to the value of 763,200,000 francs (£6,134,060) and exports 1,284,300 tons to the value of 572,300,000 francs (£4,599,740). This represents some 40 per cent. of the total trade of the Federation.

Manufactures. In or near the town are brickworks; a brewery, candle factories, charcoal furnaces, ice factories, sisal cleaning plants, sack factories, saw-mills, and factories for extracting ground-nut oil. There are also native handicraft workers. West of the town there are two basalt quarries, which are connected to the harbour by a railway line.

There are several trade unions.

Finance. The Port of Dakar has its own budget. In 1938 this balanced at 10,792,486 francs (£66,212). The principal items of revenue were the dues on the loading and discharge of cargo, which brought in 4,150,000 francs, the dues paid by ships, which brought in 1,566,000 francs, and the charges for the use of port equipment, which brought in 1,115,700 francs. The principal items of expenditure were 4,912,166 francs on wages and salaries of employees and 2,551,770 francs on the materials used in the maintenance of the port.

Description of Port

Anchorage. Outside the harbour there is good anchorage in 10 fathoms. Inside depths are greater, and there is space for a large number of vessels.

Quays and Wharfs. The main basins of the harbour are divided off from Goree bay and Dakar Roads by the North Jetty. This runs south-eastwards from the shore for nearly 1,200 yards and then turns southwards for its last 550 yards. Here are found the oil berths, and at the end of it is a light. Three moles project from the landward side of the main jetty. Behind No. 5 Mole, the nearest to the land, there is a large open space used for storing dumps of ground-nuts (Vol. I, Plate 84). This end of the harbour is a seaplane base, with a hangar on the shore. On the north-west side there are some

small piers and a slipway. A quarter of a mile south of the slipway are the naval oil-fuel tanks, which are at the northern end of the dockyard. This has, among other works, a large basin and a dry dock, and behind it are the railway goods station and workshops. Just beyond its southern corner is the main station, but extensions of the line run on to the wharfs. On the south side of the harbour are the three principal commercial basins, separated from each other by moles. The easternmost of these is the South Jetty, at the northern end of which is another light, only 275 yards from the end of North Jetty.

From Dakar point a breakwater runs for 1,000 yards south-east and east.

Alongside depths vary from 21 feet at No. 1 Mole to 34 feet at No. 8 Mole, and the total length of quays and oiling berths, apart from those in the dockyard, is 13,861 feet.

Warehouses. There are warehouses on No. 1 Mole, No. 2 Mole, and No. 3 Mole, and all along the south side of the harbour.

Equipment. The dry dock is 656 feet long and 93 feet wide and can be divided into two parts. There are numerous cranes of all types, including floating cranes. The two largest of these are each of 125 tons. Repair facilities are good, and the port is well supplied with tugs, launches, and lighters.

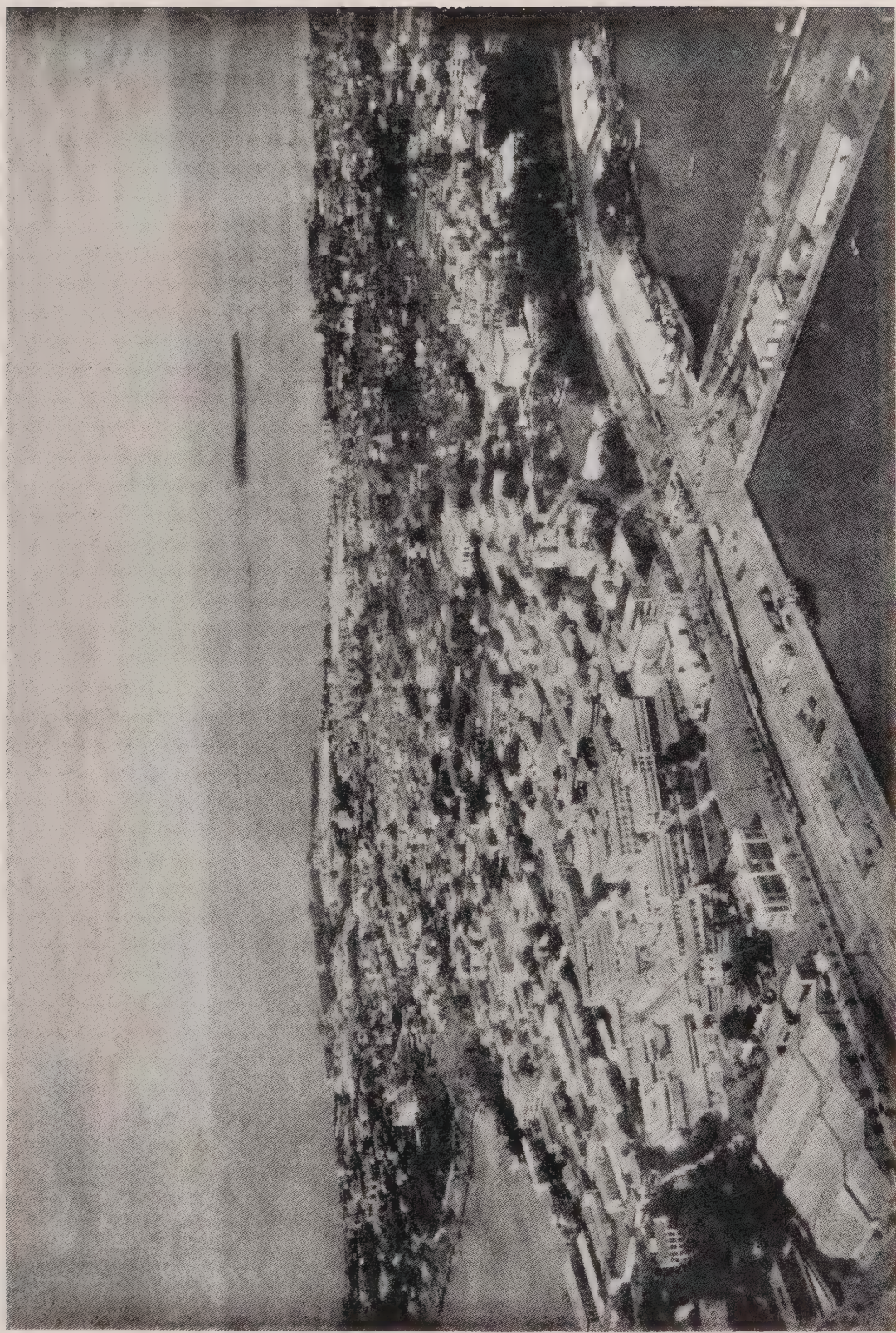
Fuel. The commercial oil-fuel tanks are on the south shore of Hann bay. Behind them is a goods station. Additional naval oil tanks are farther north-west. A pipe-line connects the commercial tanks to the oil berths at the end of North Jetty. Coal is stored on No. 8 Mole. It is very largely imported from South Wales. Good stocks of both fuels are normally held.

Communications

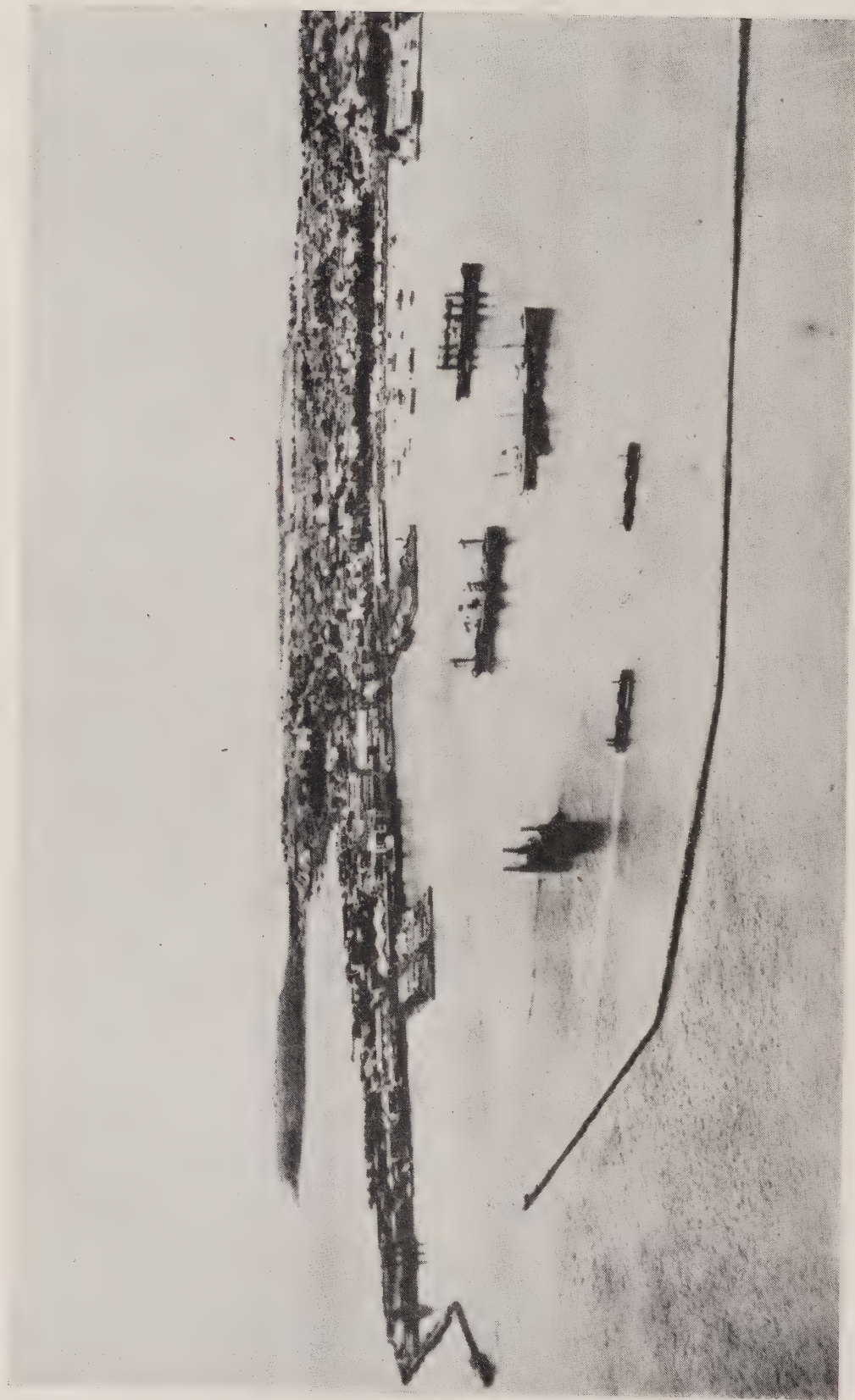
Rail. Dakar is the terminus of the railway from Thiès and St. Louis (Route 1). From Thiès Route 2 runs to Kidira (396 miles) and ultimately to Koulikoro (801 miles). The main station is at the south-east corner of the harbour, close to the dockyard.

Road. It has already been stated that the intercolonial road runs north from the end of Avenue Gambetta. It follows the curve of Hann bay to Rufisque (15 miles) before going to Thiès (44 miles). A minor road leads north-westwards to Ouakam (5 miles) and Yof (8 miles). There are also other minor roads.

Air. The airport lies nearly 5 miles north-west of the main town, and has hangars and workshops. In 1939 Dakar was on the Air France



118. *Dakar from above the South Jetty*



119. *Dakar: the port*

route from Paris to Santiago and was also the terminus of local services to Bamako and to St. Louis. The Aéromaritime company used to run flying-boat services to Conakry, Abidjan, Lagos, Douala, and Pointe Noire.

Wireless. The broadcasting station is near Madeleines bay, 700 yards north-west of the cathedral. A small station, transmitting to ships, is on Bel Air point.

Cable. Dakar is connected by cable to Casablanca, to Brest, to Fernando Noronha (Brazil), and to Conakry. The two latter cables are landed in the south-west of Bernard bay, not far from the Pasteur Institute. There is, however, a telephone cable to Goree island. This is landed on the north-west shore of the same bay.

Shipping. Lines normally serving the port include the following: America West African, Bull, Chargeurs Réunis, Elder Dempster, Fabre, Fraissinet, Gdynia America, Hamburg-Bremen, Holland West Afrika, Italia, Lloyd Triestino, Maurel et Prom, Messageries du Sénégal, Navigazione Generale Italiana, Société Générale des Transports, Société Maritime Belge des Transports, and Société Navale de l'Ouest.

Coasting vessels sail regularly for Port Etienne, St. Louis, Kaolack, and Ziguinchor.

GOREE (14° 39'; 17° 23' W.). Population, 714. Custom-house. Barracks and military hospital.

The rocky island of Goree (Plate 112) has an area of 138 acres. The first Europeans to land on it were the Portuguese in 1445, and since then it has had a chequered history, which has been told elsewhere in these volumes.

Most of the centre of the island is occupied by buildings, and in the south there is the old fort. In the extreme north is a large lime-kiln.

The only source of water is an artesian well in the fort.

Trade. Trade is now limited to the ordinary requirements of the islanders, and traffic to taking them and their goods to and from the mainland.

Harbour. In the north-east of the island there is a little bay where there are three jetties, only one of which (Plate 121) is now in use. The depth at its head is 10 feet.

RUFISQUE (14° 41'; 17° 12' W.). Population, 19,764, including 180 Europeans. Full Commune. Custom-house. Medical post. Barracks. Police headquarters. Power station. Hotel. Garage.

Rufisque was the first port from which ground-nuts were exported, and to-day ground-nuts are still the main article of trade. In the first quarter of 1939 it exported 25,152 tons of them. On the north side of Goree bay, Rufisque can only handle small ships. There is anchorage off shore in 3-7 fathoms, but from July to November heavy swell makes it almost unusable.

Since 1937 the town has been in the District of Dakar.

Jetties and Equipment. There are three jetties with alongside depths of at least $9\frac{1}{2}$ feet. Two of these are of iron, one being 603 feet long and 33 feet wide with an extension by a wharf 65 feet long and 52 feet wide. The third is of concrete and is 656 feet long. Decauville tracks connect these jetties to the railway. There is one 5-ton crane and one 2-ton, besides smaller ones. There are 4 tugs and 2 lighters.

Communications

Rail. By rail Rufisque is 17 miles from Dakar, $26\frac{1}{2}$ miles from Thiès, 146 miles from St. Louis, and 268 miles from Tambacounda.

Road. The intercolonial road runs from Dakar (15 miles) through to Thiès (29 miles), where it divides. Eight miles beyond Rufisque a colonial road branches off it to go to M'Bour (38 miles), Joal (61 miles), and Fatik (101 miles). Another colonial road goes north-eastwards from the town to Sangalkan (6 miles) and Kayar (17 miles).

M'BOUR ($14^{\circ} 21'$; $16^{\circ} 57'$ W.). Population, *c.* 4,500, including 175 Europeans. Mixed Commune. District headquarters. Custom-house. Medical post. Police station.

The town of M'Bour stands at the head of a shallow cove which extends for a mile out to sea as a passage between two reefs. Inside the cove the water is up to $4\frac{1}{2}$ feet deep, and there is a wharf used by surf-boats. Ships anchor $2\frac{1}{2}$ miles off shore, but heavy swell makes conditions difficult from June to November. Ground-nuts and millet are exported.

M'Bour is on the colonial road from Rufisque (38 miles) to Joal (23 miles) and Fatik (63 miles). Several minor roads lead inland, notably one to Thiès, along which there is a bus service twice a day. For half the year there is also a service to Joal.

JOAL ($14^{\circ} 09'$; $16^{\circ} 51'$ W.). Population, *c.* 900. Custom-house. Roman Catholic mission.

Joal was founded by the Norman Company in the middle of the seventeenth century. It was captured by the Dutch in 1677 and by

the British 70 years later, and it did not finally become French until 1763. It is on a sandspit in front of a coastal lagoon. Off shore there is a large sandbank, exposed at low tide.

There is a small wharf, but, owing to the difficulty of access, there is very little trade. In 1937, for example, only 4,600 tons of goods were handled and their value was 4,600,000 francs (£36,970).

The colonial road from Fatik (40 miles) to M'Bour (23 miles) and Rufisque (61 miles) runs through the town. There are also minor roads. From November to June there is a bus service to M'Bour and Thiès four days a week.

FOUNDIOUGNE ($14^{\circ} 06'$; $16^{\circ} 29'$ W.). Population, 2,734. Mixed Commune. District headquarters. Custom-house. Medical post.

Foundiougne is on an island formed by the Saloum, the Djomboss, and their connecting channels. Much of the district is swampy, but the town itself is on a piece of firm ground on the left bank of the Saloum, 33 miles from the sea.

Anchorage in the river is in $3\frac{1}{2}$ fathoms. There are 8 wharves, of which 1 is owned by the municipality.

The principal export is ground-nuts, but in recent years Foundiougne has declined in prosperity. This is owing to the rise of Kaolack, which is better situated on the north bank of the river and which has much better communications.

There is a ferry across the river, and from its far side a rough road leads to Fatik. South of the river there is a colonial road eastwards to Kaolack (32 miles). Along both these roads there is a bus service, daily in the dry season and fortnightly in the wet.

FATIK ($14^{\circ} 18'$; $16^{\circ} 27'$ W.). Population, 3,521, including 128 Europeans. Mixed Commune. District headquarters. Medical post. Police station. Emergency landing-ground. Regional School. Garage.

At Nonane, on Marigot de Fatik $14\frac{1}{2}$ miles above its junction with the Saloum, is the site of one of the old *escales*. This is the upper limit for boats drawing 10 feet, but smaller craft can ascend a further 7 miles to Fatik, 58 miles from the sea. The town is on the right bank of the river, which is here called the Sine.

Trade is chiefly in ground-nuts.

Colonial roads lead north to Bambey (27 miles), south-east to Kaolack (28 miles), and south-west to Joal (60 miles), and a minor road south to Foundiougne.

The landing-ground is half a mile west of the town.

KAOLACK ($14^{\circ} 07'$; $16^{\circ} 07'$ W.). Population, 21,973. Mixed Commune. Headquarters of the province of Sine-Saloum. Custom-house. Chamber of Commerce. Medical post. Police headquarters. Meteorological station. Landing-ground. Wireless station. Regional School. Roman Catholic mission. Bank of West Africa. Banque Commerciale Africaine. Hotels. Garages. Race-course.

Kaolack exports more ground-nuts than any other port in the Federation. It is a well-planned town with squares and trees, and it is on the right bank of the Saloum, 71 miles above its mouth, where the river is 100 yards wide. It is the limit of navigation for sea-going ships.

In 1904 Kaolack had only 300 inhabitants, but the development of communications in the neighbourhood has caused it to grow to its present size. The figure given above is for the permanent population only. At the height of the ground-nut season there are an additional 20,000 temporary inhabitants.

Trade

During the first quarter of 1939 Kaolack exported 32,259 tons of ground-nuts (Plate 122), as against 26,832 tons from Dakar. Owing to the bar across the Saloum, however, many ships do not load to their maximum capacity but go on to Dakar to complete their lading.

Across the river from the town is a large salt-works.

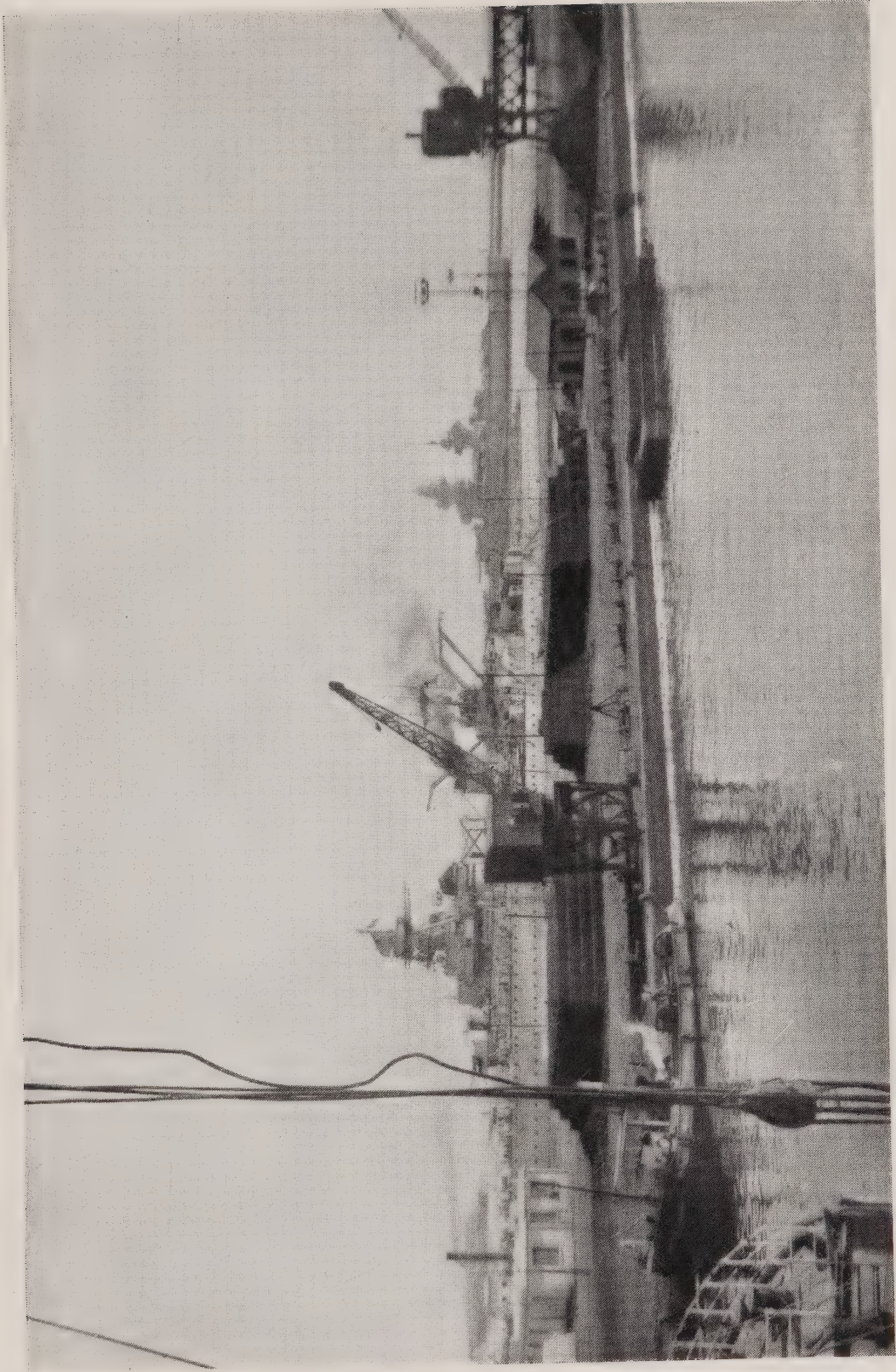
The Port

On the north bank there are concrete quays with a total length of over 2,000 feet and on the south bank there is a small wharf. At Lyndiane, 9 miles downstream, is a wharf belonging to the firm of Peyrissac et Cie.

Communications

Rail. Kaolack is the terminus of Route 5 to Guinguiné (14 miles), and is therefore 142 miles from Dakar. It is also the terminus of Route 6 to Lyndiane ($6\frac{1}{2}$ miles). Both stations are close to the river, and there is a line directly on to the quays.

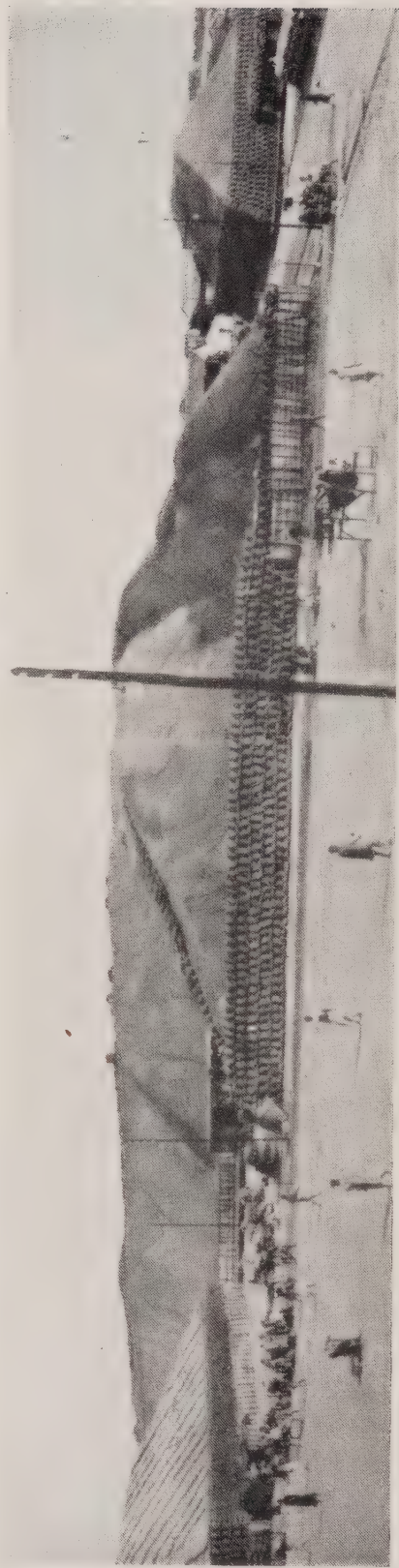
Road. Intercolonial roads lead northward to Gossas (25 miles), Thiès (82 miles), and Dakar (126 miles), eastward to Kaffrine (37 miles) and Tambacounda (188 miles), and south-south-westward to Messira (49 miles) and the frontier of the Gambia (57 miles). The last-named road crosses the Saloum by a bridge. A colonial road goes north-west to Fatik (28 miles), another south-east to Nioro



120, *Dakar*; Mole No. 8



121. *The jetty at Goree*



122. *Ground-nut dumps at Kaolack*

(33 miles) and Medina (50 miles), and a third west to Foundiougne (32 miles).

Air. The airfield is 1 mile north-east of the town.

Wireless. The wireless station is in the centre of the town.

Shipping. Boats of the Messageries du Sénégal line call regularly, and the Compagnie de Navigation Paquet maintains a weekly service with Foundiougne, Bathurst, and Dakar.

ZIGUINCHOR ($12^{\circ} 32'$; $16^{\circ} 21' W.$). Population, 6,070. Mixed Commune. Headquarters of the Casamance Territory and of the Province of Ziguinchor. Custom-house. Magistrate's Court. Chamber of Commerce. Hospital and maternity home. Police headquarters. Meteorological station. Emergency landing-ground. Wireless station. Roman Catholic mission. Garages. Daily market.

The first large piece of firm ground upstream from the mouth of the Casamance is nearly 42 miles from the sea, and it is here, on the left bank, that Ziguinchor stands. The depth of the river is 6 fathoms. Jetties have been built at right angles to the waterfront, partly to counteract silting, and ships drawing 15 feet can go alongside them. The quays have a total length of over 3,000 feet and the warehouses a total capacity of some 25,000 tons. There are no cranes, all goods being manhandled.

There is a considerable variety of exports, including ground-nuts, fruit, rice, palm oil, palm kernels, cotton, tobacco, sisal, and hides, but imports are chiefly manufactured goods and building materials. In value of trade Ziguinchor comes between Foundiougne and Rufisque.

Communications

Road. The river is crossed by a ferry, and a colonial road leads north to Bignona (16 miles) and then east to Sedhiou (74 miles) and Kolda (136 miles). Another one goes along the south bank of the Casamance, also to Kolda (130 miles). Minor roads lead south to the frontier of Portuguese Guinea and south-west to Oussouye and Diembering.

Air. Seaplanes can alight in the river, and there is a weekly Aéromaritime service to Bathurst and Dakar. The landing-ground is $1\frac{1}{2}$ miles south of the town.

Wireless. The two wireless stations are housed in the same building.

SEDHIOU ($12^{\circ} 42'$; $15^{\circ} 31' W.$). Population, 1,653. Provincial headquarters. Medical post. Emergency landing-ground. Regional School.

Sedhiou is on the right bank of the Casamance, 68 miles above Ziguinchor and 110 miles from the sea, and it is only usable by vessels drawing up to 5 feet. Formerly more prosperous than it is to-day, it has some brick buildings and shops. Many of the traders are Syrians, and there is a modest export of ground-nuts, hides, rice, and wax.

By colonial road Sedhiou is 58 miles from Bignona, 74 miles from Ziguinchor, and 62 miles from Kolda.

11. MINERALS

THE principal mineral exported from the colony is ilmenite, which is washed from beach sands between Rufisque and Cape Rouge, between Joal and Diakhanor, and at the mouth of the Casamance. Zircon (Vol. I, pp. 295-6) is obtained from the same sands, the ilmenite:zircon ratio being about 3:1. Other minerals of potential value are phosphates and limestone, both of which occur in Lower Eocene strata. Lenticular beds of phosphate, ranging from 30 to 65 per cent. bone phosphate of lime, are found near Matam and near Thiès. Limestones and marls are more widespread than in any other colony, and at Rufisque they have been worked experimentally for the commercial production of cement. Bitumen has been encountered at Dakar in borings for water, but investigations have shown that the geological structure is unsuited to the accumulation of petroleum.

12. AGRICULTURE

THE Gambia divides the millet from the manioc zone, but ground-nuts are the chief crop of both. Sisal-growing is an important, though more recent, industry. South of the Gambia the Casamance Territory provides a rich area for fruit and subsistence crops as well as for ground-nuts.

There is far more production for export than in any other colony.

Food Crops

Millets. Millets form the staple diet of the majority of the native population and are grown all over that part of the colony north of the

Gambia, often in rotation with ground-nuts. Of the quick-maturing varieties *souna* and *sanio* are the most popular, the former thriving in sandy soil, the latter in heavier ground. Several kinds of sorghum are also cultivated. In the river area millet is sown where the floods have subsided and is harvested in April. In other parts it is planted immediately before the rainy season. Production probably averages about 300,000 tons annually. The export of millet from one province to another is controlled according to local needs.

Rice. The area flooded by the Casamance is naturally suited for rice cultivation. The rice-fields are handed down from father to son, each family growing sufficient for its own consumption and to pay its taxes. A store of rice is always kept to guard against a lean year or to be exchanged for some other commodity required.

Sugar-cane. This is grown near every village where there is enough water. No attempt has been made to commercialize the crop, and the West African varieties are more woody and contain less juice than those grown elsewhere for export. Sugar-cane (*Saccharum officinarum*) is a perennial plant of the grass family. It is easy to grow, even near the sea, but takes at least a year to mature. When grown for local use, as it is here, sugar is not extracted, but the red or white stems are chewed.

The Baobab. The baobab (*Adansonia digitata*) is found generally in the thornland (Plate 111), and is, therefore, much in evidence in Senegal. It is remarkable for the large girth of its trunk in comparison to its branches and leaves. The long green fruit, known as monkey-bread, is used as a food or as a seasoner. Boiled with water and then cooled, it also makes a refreshing drink, while the leaves and the young shoots are also good to eat. The inner bark yields a tough fibre, which can be twisted into rope or woven into a waterproof cloth. About 30 years ago a factory was opened at Dakar to prepare the fibre for export to rope- and paper-making firms in France. The bark and fibre can be stripped off without causing the death of the tree.

Manioc, beans, and maize are grown generally in the vicinity of villages. In the Cape Verde peninsula these, as well as yams, sweet potatoes, and melons, are grown for the Dakar markets.

Economic Crops

Ground-nuts. Ground-nuts (*Arachis hypogaea*) require a tropical climate and an annual rainfall of from 14 to 60 inches. They are the

sixth crop of Africa, and 43 per cent. of the total continental production comes from Senegal. The two main groups cultivated are the 'runner' and the 'erect'. The Rufisque and Cayor varieties, both runners, are those grown generally here and also in British West Africa. The method of cultivation is described in Volume I, p. 321. Ground-nuts were originally grown as a staple native crop, but the industrial demand for vegetable oils, coupled with the development of transport facilities, opened up a world market for them. Extra labour for the harvest is provided annually by seasonal immigration from French Sudan, French Guinea, Portuguese Guinea, and the Gambia. In 1938 the number of outside workers was 69,757. Of these, 56,743 went to the Kaolack area, between 1,000 and 3,500 to Sedhiou, Ziguinchor, Kolda, Tambacounda, and Diourbel, and the remainder to Thiès and Linguéré.

There are numerous shelling factories. Early in 1939 new ones were opened at Kaolack, Ziguinchor, and Kounghoul.

In 1938 nearly 2,000,000 acres were under cultivation and the experimental station at Bambey distributed 5,414 tons of selected seed. In 1939 7,382 tons of seed were sent out, with a corresponding increase in acreage.

During the British blockade of French West Africa after the fall of France in 1940, ground-nuts were converted into fuel oil. If this practice has been proved worth continuing after the war, cultivation may be greatly extended.

Sisal. Sisal originated in Mexico, being named after the port of Sisal in Yucatan province, and it was introduced into Senegal at the end of the nineteenth century. The species grown are *Agave rigida sisalana*, *A. rigida elongata*, and *A. rigida zapupe*. The rigid leaves containing the fibre are about 4 feet long and are harvested biennially from the fourth to the eighth or tenth year. When a plant has finished producing it shoots up a tall flower stem, with bulbils or buds on the end, and then withers.

The preparation of stem and leaf fibres is lengthy. First the fleshy tissue encasing the fibre is scraped away, and then the fibre is washed, hung out to dry, and brushed. It is now ready for grading. Next it is combed into a continuous sliver of untwisted rope. The final process is the drawing and twisting of the sliver to a uniform thinness for spinning into a rope that is particularly resistant to sea-water. The largest plantation is in French Sudan, and stretches for 12 miles along the bank of the Senegal near Kayes. Other smaller ones are in Tambacounda and on the Cape Verde peninsula. There is oppor-

tunity for much development in this industry, particularly in the irrigated areas of the Casamance Territory and Sine-Saloum. Europeans own the majority of the plantations, but co-operate with and encourage native growers. During the first quarter of 1939 production in Tambacounda province was 152 tons, and the factory at Kolda treated 165 tons of fibre.

Ginger. The ginger plant (*Zingiber officinale*) is of Asiatic origin, but it has been cultivated in Africa for many centuries. It is grown on a small scale wherever the rainfall is over 30 inches. It does best in a rich soil and requires shade. The ginger of commerce is prepared from the rhizome or underground stem, which is mature when the leaves turn yellow. The best ginger is prepared from immature rhizomes, which are peeled and preserved in sugar syrup, but in West Africa the coarser, mature stems are also used. Chewed ginger is reputed to enhance the stimulating effect of kola.

Pimentos. Several species of *Capsicum* or peppers grow in the Federation. In Senegal the most common are *C. annum* and *C. frutescens*, both bearing red fruits. The former was introduced from South America. It is less pungent and has larger fruits, known as 'capsicums'. *C. frutescens* has hotter fruits, known in commerce as 'chillies'. Cayenne or paprika is the red powder obtained from grounding the fruit. Pepper shrubs are grown from seeds, and after three months bear fruit for at least six months. These red peppers should not be confused with the common pepper, which is a climber and does not grow in West Africa.

Henna. This plant (*Lawsonia inermis*), like sugar-cane, maize, ginger, and castor oil, is grown wherever there is enough water. The plant is much revered by Moslems and often grown as a hedge. The powder of the young, dried leaves is the source of henna dye.

Other Crops. Other products of which small quantities are exported are citrus fruits, gum arabic, shea butter, cotton, kapok, and palm kernels.

Livestock

Livestock are fewer here than in any other colony. Sheep and goats, the latter being the more numerous, are kept near the river between Podor and Bakel and number about 100,000. There are some 310,000 cattle, 50,000 donkeys, 6,000 camels, and 14,000 pigs. These last are mainly kept in the Casamance Territory. There are 36,000 horses. These are of two breeds, the M'Bayar and the M'Par, and

the former provide mounts for the tirailleurs. Apiculture has increased in recent years, and in 1939 over 59,000 beehives were installed in the provinces of Bakel, Baol, Kolda, and Sine-Saloum.

Experimental Stations

There are agricultural experimental stations at Bambey, Dagana, Kolda, Louga, and Tambacounda, nurseries and botanical gardens at Hann, Richard Toll, and Sor, a livestock experimental station at Makhana (11 miles north-east of St. Louis), and farm schools at Diorbivol and Soringho (near Matam). The stations at Bambey and Louga specialize in ground-nuts, those at Kolda and Tambacounda in sisal, and that at Dagana in gum and *Borassus* palms (Fig. 8).

13. COMMERCE AND FINANCE

COMMERCE

OFFICIAL statistics combine Senegal and French Sudan under one head for detailed figures, and, in addition, the general summary of *Commerce Spécial* combines them with Mauritania. These three colonies account for more than 50 per cent. of the total trade of the Federation, and of this percentage Senegal undoubtedly provides a very large proportion.

The Balance of Trade. The value of the imports commonly exceeds that of the exports, but in 1938, the last year for which statistics are available, imports were valued at 1,016,837,000 francs and exports at 1,725,649,000 francs.

Firms. The principal firms are Chavenel et Fils, the Commerce Africain, the Compagnie Française de l'Afrique Occidentale, Dèves et Chaumet, Maurel et Prom, the Nouvelle Société Commerciale Africaine, Charles Peyrissac et Cie., the Société Commerciale de l'Ouest Africain, Soucail et Cie., and Vézia et Cie.

Exports. The principal item of export is the ground-nut. The first export of ground-nuts was made from Rufisque to Rouen in 1840, and since 1844 there have been regular shipments to Marseilles. In 1936, 393,485 tons of ground-nuts in shell (28,452 tons from French Sudan) and 60,448 tons of shelled ground-nuts (4,429 tons from French Sudan) were exported, respectively worth 351,674,905 francs and 73,384,546 francs. In 1937 both quantities rose, the nuts in shell to 517,322 tons worth 431,746,036 francs and the shelled nuts to

Expenditure

	<i>Essential expenditure Francs</i>	<i>Optional expenditure Francs</i>
I. Ordinary Expenditure		
Debt charges	657,000	..
Salaries of administrative staffs	23,403,000	..
Other administrative expenses	3,861,550	1,994,450
Posts, telegraphs, &c. (salaries and wages)	13,239,200	1,234,800
Posts, telegraphs, &c. (plant and materials)	2,246,800	6,431,200
Public works	141,850	12,485,150
Social and economic departments (salaries)	12,967,200	50,800
Social and economic departments (other expenditure)	2,520,730	9,083,270
Sundry disbursements	24,642,013	1,189,987
Secret funds	10,000	..
Unforeseen expenses	1,000	167,000
TOTALS	83,690,343	32,636,657
II. Extraordinary Expenditure		
Previous payments to the Reserve Bank		4,710,000
TOTAL		120,737,000

Two features emerge from an examination of these figures. One is the customary large proportion of the expenditure paid out in salaries, and the other is the division of the expenditure into 'essential' and 'optional' categories. It will also be observed that only a small percentage of the salaries is found in the latter column.

The District of Dakar

The budget for 1938 balanced at 60,033,000 francs (£386,301). Its form of presentation was the same as for the ordinary colonies, except that there was no Extraordinary Revenue or Expenditure, and its details were as follows:

Revenue

	<i>Francs</i>
Customs and excise	5,306,000
Posts, telegraphs, &c.	5,488,600
Grants and subsidies	49,189,400
Receipts from previous financial year	49,000
TOTAL	60,033,000

Expenditure

	<i>Francs</i>
Debt charges	10,000
Administration of the District (salaries)	508,000
Administration of the District (other expenses)	155,500

	<i>Francs</i>
Federal administration (salaries)	10,206,400
Federal administration (other expenses)	1,656,000
Financial department (salaries)	1,447,000
Financial department (other expenses)	370,000
Posts, telegraphs, &c. (salaries and wages)	6,631,000
Posts, telegraphs, &c. (plant and materials)	3,492,000
Public works	6,782,000
Social and economic departments (salaries)	8,868,000
Social and economic departments (other expenditure) . .	10,850,000
Sundry disbursements	2,726,000
Secret funds	12,600
Unforeseen expenses	25,000
Water department (salaries)	748,000
Water department (other expenditure)	5,545,500
TOTAL	<u>60,033,000</u>

In 1937, however, Extraordinary Expenditure amounted to 8,445,000 francs (£67,875).

The budget for the Port of Dakar has already been given on p. 447.

14. COMMUNICATIONS

WATERWAYS

THE navigable rivers and estuaries of the colony have been fully described in Volume I, pp. 366–7. The principal distances from St. Louis up the Senegal river are as follows:

	<i>Miles</i>
St. Louis	0
Rosso	82
Dagana	116
Podor	177
Boghé (Mauritania)	247
Kaédi (Mauritania)	341
Matam	400
Bakel	519
Ambidedi (French Sudan)	574
Kayes (French Sudan)	603

RAILWAYS

There are 648 miles (1,043 km.) of railway in the colony, all of metre gauge. For purposes of description six lines may be distinguished.

1. Dakar–St. Louis (163 miles).
2. Louga–Linguéré (81 miles).

3. Thiès-Kidira ($352\frac{1}{2}$ miles).
4. Diourbel-Touba (31 miles).
5. Guinguiné-Kaolack (14 miles).
6. Kaolack-Lyndiane ($6\frac{1}{2}$ miles).

History

The first plan for a railway was made by Pinet-Laprade in 1857. It was to connect the head of navigation on the Senegal with a suitable point on the Niger, and in 1863 Mage prospected the country between Medine and Bamako. During the next fifteen years or so various other schemes were proposed. All of them were chiefly concerned with the military conquest of Cayor, of the middle Niger basin, and of the lands between Timbuktu and Algeria. Many of them envisaged a trans-Saharan line, and there seems to have been little thought of economic development.

On 5 February 1880 a Bill was introduced into the French Chamber of Deputies to authorize a line from Dakar to St. Louis with a branch to Medine and the middle Niger. It was considerably amended before being passed, the chief alteration being the excision of the section from St. Louis to Medine.

Surveys of the two other sections were made, and on 21 June 1882 a contract was signed with the Société de Construction des Batignolles to build a line from Dakar to St. Louis. This company remained the owner of the line until it was bought out by the Government in 1933. European labour was largely employed in construction, and this meant that work had to be suspended from July to November each year. In spite of this and other difficulties, the line was opened on 6 July 1885. This was the first railway in West Africa.

It soon became apparent that faulty methods had been used. The wooden sleepers were eaten by termites and the track had been very poorly ballasted. These defects, however, were eventually remedied.

The railway achieved its military purpose, but its economic results were of equal value. In particular, it stimulated the production of ground-nuts by providing means for their export. This had important effects on the development of Dakar and of Rufisque.

Meanwhile a little progress had been made on the section linking the Senegal with the Niger. In contradistinction to the Dakar-St. Louis line, the work was done by the Government. It had an inauspicious beginning. Medine is 625 miles by river from St. Louis and can only be reached by barge in August and September. Material brought from the port was seldom taken farther than Kayes, and goods

were dumped there and at places even farther downstream. These had to be transported upstream in barges drawn by men. Diseases, especially yellow fever, caused many deaths, and there were endless difficulties with workmen, both European and native. Furthermore, the country was not fully known and only half pacified. Work began at Medine in the middle of 1881, but the military post at Kita was less than six months old, and that at Bamako was not set up until 1883. By the end of 1881 precisely one kilometre of the line had been completed. In the following year the ships started from St. Louis too late and could not even reach Kayes. There were several epidemics of typhoid and several fires in the store dumps.

By 1884 there were 34 miles of track, but it was so badly constructed as to be incapable of supporting the weight of a locomotive. There was no ballast, poor local wood was used for sleepers, curves were too sharp, and gradients were too severe. In 1888 the work was handed over to the French Marines, who made some improvements in the existing track and extended it to Mahina, a distance of 66 miles. It was still unusable. In the following year a Commission was appointed, and made various recommendations, some of which showed that the original purpose of the line had become obscured. By 1891 there were 79 miles of metre-gauge track from Kayes to Mahina, a ferry across the Bafing, 24 miles of 60 cm.-gauge track from there to Diouléba, and 3 miles of 50 cm.-gauge track beyond that place. In the same year another Commission was appointed, and in the following year a party of engineers was sent out under the command of Major Joffre. Substantial improvements were rapidly effected, and in 1893 the first train ran from Kayes to Mahina. In 1896 the Bafing was bridged. In May 1904 the line, metre-gauge all the way, reached the Niger at Bamako and on 10 December that year it reached Koulikoro. It has since been considerably improved.

In the summer of 1902 the Senegal failed to rise. This prevented any effective provisioning of the posts in French Sudan and also gave a stimulus to railway construction. The original plan for a line from St. Louis to Kayes was dropped, and Thiès was chosen as the junction. The new railway was intended not only to provide a link between existing lines but also to find and attract local traffic. Various routes were discussed, and in 1907 construction began from both ends. The section from Kayes to Ambidedi (26 miles) was opened in December 1908 and that from Thiès to Diourbel ($50\frac{1}{2}$ miles) on 16 July 1909. Work on the latter began again in February 1910 and the line reached Guinguiné in the December of that year. By the middle of 1913 it

was at Koussanar, and when war came in 1914 it had reached a place called Cotiari Naoudé, 258 miles from Thiès. In 1920 a force of 8,000 labourers was recruited, and the line was completed on 5 August 1923.

Branch Lines. Work on the branch from Guinguiné to Kaolack began on 6 June 1911, and the line was officially opened on 1 January 1912. This railway, of course, has transformed Kaolack and has been the prime factor in its growth to its present importance. The private line from Kaolack to Lyndiane was built by the firm of Charles Peyrissac et Cie in 1925.

The line from Diourbel was originally planned to go to Tal-Tal and Thiel. Construction began on 1 December 1929, and the line reached Touba on 1 March 1931. Financial difficulties postponed further extension, and nothing more has been done up to the present. This branch has proved valuable to local producers of ground-nuts and has been more successful than its contemporary to Linguéré.

This latter was begun from Louga early in 1929 and reached Coki (18½ miles) on 1 October that year. Railhead was at Dahra on 1 October 1930 and the whole line was finished on 1 October 1931. Results have not been quite as good as had been hoped.

Permanent Way, Locomotives, and Rolling-stock

Rails and Sleepers. The section from Dakar to St. Louis has rails weighing 30 kg. per metre (61 lb. per yard) bought second-hand from the Nord Railway of France in 1929, and that from Thiès to Kayes has rails weighing 25 kg. and 26 kg. per metre (50½ lb. and 52½ lb. per yard). The track from Kayes to Koulikoro was originally laid with rails weighing 20 kg. per metre (40 lb. per yard) and was notorious for its numerous rail breakages; but it is now in process of being relaid on a new alinement with rails weighing 30 kg. per metre (61 lb. per yard). The Louga-Linguéré branch was given the old rails from the Dakar-St. Louis line. These weigh 20 kg. per metre (40 lb. per yard).

Sleepers are of steel.

Gradients and Curvature. These vary considerably, but there are no gradients steeper than 1:30, and the minimum radius of curves is 197 yards. It is intended ultimately to reduce these figures to 1:71 and 219 yards respectively.

Bridges. The principal bridges are noted in the itineraries below. Minor bridges are of steel and concrete, and in many cases old rails are used as reinforcing bars. Culverts are numerous.



123. *Railway bridge across the Falémé at Kidira*



124. *Diourbel: the railway station*



125. Custom-house at the frontier between French Togo and British Togo

Locomotives. In 1939 the following locomotives were in service:

<i>Makers and type</i>	<i>Adhesive weight in tons</i>	<i>Number</i>
Mallet articulated . . .	43-50	10
Mikado 2-8-0. . . .	30-40	42
Pignet	29	34
Cail	27	24
Cail, Corpet, Weidknecht, Decauville	13-27	75
	Total	185

Since that date 2 Micheline railcars, 3 Als-Thorn diesel electric locomotives, and 2 Beyer-Garratts have been brought into use. The Beyer-Garratts are 4-4-2 + 2-4-4 articulated with an adhesive weight of 91 tons.

Fuel. Neither coal nor wood is found locally. Before 1940 some 60,000 tons of briquettes were annually imported. At the present time these are hard to obtain, and they are supplemented by whatever wood is available and by briquetted ground-nut shells.

Carriages and Wagons. In 1939 there were 254 passenger coaches and 2,105 goods wagons in service. The passenger coaches included restaurant cars and sleeping cars. At the end of 1939, 177 covered goods wagons were delivered from France.

State of Repair. There are excellent workshops at Thiès; but the general standard of upkeep, never very high, has greatly deteriorated as a result of stocks of material becoming almost exhausted.

Traffic

The following table gives figures for 1937 and 1938:

	1937	1938
Passengers. . . .	2,603,341	2,660,497
Passenger miles . .	118,433,207	120,620,300
Freight in tons . .	615,043	501,593
Ton miles	120,570,598	107,970,715
Revenue	£876,411	£684,788

The principal items of freight handled were ground-nuts, shea butter, gum arabic, sisal, and fuel.

*Itineraries**Route I*

DAKAR-ST. LOUIS

<i>Distance from Dakar</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	..	DAKAR	The main passenger station is by the Bassin Ouest. Immediately north-west are workshops and a goods station. Numerous tracks run along the sides of the basins, and, $\frac{3}{4}$ mile from the station, there is a branch that connects to the quarries, 3 miles to the west.
4	2 $\frac{1}{2}$	..	..
13	8	33	TIAROYE	At 2 $\frac{1}{2}$ miles a track turns south-east to the goods station by the oil-fuel depot. At first the main line runs north, but it gradually bends east in conformity with the shape of Hann bay. It is close to the sea across the marigot of Hann, but turns a little inland to reach Tiaroye station. This is 1 $\frac{1}{2}$ miles from its village. The line continues inland, avoiding plantations of palm trees, and follows a somewhat winding course to Rufisque. The station is on the north side of the town, about $\frac{1}{2}$ mile from the sea. The line keeps parallel to the shore as far as the village of Bargny-Gouddou. Here it swings north-east through wooded undulating country to the brushwood Forest of Thiès. This is on the top and face of a scarp, and the railway makes use of a narrow valley to reach
20	12 $\frac{1}{2}$	..	M'BAÔ (halt)	
27	17	33	RUFISQUE	
32	20	..	..
46	28 $\frac{1}{2}$	82	SEBIKOTANE	
55	34	66	POUT	

<i>Distance from Dakar</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
70	43½	207	THIÈS	<p>the important junction of Thiès, the highest station of this part of the railway. There are sidings and workshops. The line to Koulikoro continues to the east, but that to St. Louis turns north-east, running parallel with and about 20 miles from the coast. It traverses a sandy and inhospitable region, which is, nevertheless, important for ground-nuts. The line runs in long straight stretches and is never far from the road. At Louga there is a junction with the branch that goes south-east to Linguéré. The main line adopts a more winding course across a thinly vegetated area, descending gently. At M'Pal it turns west over sandy country to reach the coastal marshlands at Leybar. The Leybar marsh itself is crossed by a bridge of 4 spans, respectively of 89 feet, 108 feet, 89 feet, and 108 feet. The line terminates at Sor (Fig. 53), where there are three stations: goods, main, and harbour. The last named is on a branch track, which runs on to the principal jetty. There is no railway bridge across the Senegal.</p>
92	57	164	TIVAOUANE	
104	64½	131	PIRÉ-GOUREYE	
120	74½	132	MEKHÉ	
130	81	125	KELLÉ	
142	88	130	N'DANDE	
155	96	133	KÉBÉMER	
171	106	131	GOUMBO GUEOUL	
192	119	128	LOUGA	
217	135	66	SAKAL	
230	143	33	M'PAL	
244	151½	16	RAO	
257	159½	..	LEYBAR (halt)	
258	160	..	..
262	163	7	ST. LOUIS	

Route 2

LOUGA-LINGUÉRÉ

<i>Distance from Louga</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	138	LOUGA	The line branches south-east away from the main line from Dakar to St. Louis. It then turns east to maintain a generally eastwards direction. The country varies little in height and is devoid of features of interest. The line is rarely more than a hundred yards from the road. In its last stages it makes use of a ouadi commonly called the Ferlo Valley.
22	13	151	OUARRAC	
30	18½	157	COKI	
43	27	164	TIAMEN	
57	35½	190	N'DIAO	
68	42	180	BOUTIÉROBÉ	
84	52	131	NIANDOUL	
92	57	98	DAHRA	
104	65	138	SOMME	
116	72	118	OUARKHOR	
131	81	33	LINGUÉRÉ	Linguéré itself is a road junction of considerable local importance.

Route 3

THIÈS-KIDIRA

<i>Distance from Dakar</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
70	43½	207	THIÈS	Leaving the route for St. Louis, this line bears south-east and then east to descend to Kombole, passing through densely populated areas. From Kombole it runs almost due east-south-east all the way to Diourbel. It crosses a number of minor valleys. At Diourbel is the junction with the branch to Touba. The main line turns sharply south-east through country covered with brushwood and clumps of trees.
85	53	112	THIENABA (halt)	
96	60	36	KOMBOLE	
110	68	52	DANGALMA (halt)	
124	77	66	BAMBEY	
139	86	72	DIABAYE LAGNAR (halt)	
151	94	39	DIOURBEL	
165	102½	81	TOKI (halt)	
178	110½	82	GOSSAS	
197	122	66	GANIEK (halt)	

<i>Distance from Dakar</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
206	128	65	GUINGUINÉ	The branch line from Kaolack leaves Guinguiné in the same direction as the main line approaches it. The latter curves gently to assume an easterly course. The Saloum, now shrunk to a tiny seasonal stream, is crossed by a culvert shortly after Birkelane. As far as Malème, 4 miles beyond Malème-Hodar station, the line is accompanied by the road, but subsequently runs to its north. The railway comes somewhat south of its most direct route, partly to skirt the arid Ferlo region and partly to divert trade from the Gambia. Most of the villages in this section are the result of the railway. After Sinthiou-Malème the line makes use of the upper part of the valley of the Sandougou, and so reaches Tambacounda, the route's southernmost point in Senegal.
231	143½	33	BIRKELANE	
233	145	..	..
252	156½	39	KAFFRINE	
280	174	131	MALÈME-HODAR	
310	193	148	MAKA YOP	
333·5	207	98	KOUNGHEUL	
361	224	79	KOUPENTOUN	
389	242	130	MALÈME-NIANI	
413	257	66	KOUSSANAR	
433	269	39	SINTHIOU-MALÈME	Bearing north-eastwards, the line runs across a marshy but fertile plain, and, beyond Bala, across undulating country. Between Couténabé and Sinthiou Fissa it rises to its highest point, the watershed between the Gambia and the Senegal basins. As far as Couténabé the line keeps in close company with the road, but from this point onwards the two are apart, the road running to Nayas and the railway
459	285	148	TAMBACOUNDA	
486	302	72	COTIARI NAOUDÉ	
521	324	164	BALA	
550	342	223	BOUGHEUL BAMBA	
573	356	180	GOUDIRI	
592	368	230	COUTÉNABÉ	
607	377	331	..	
620	385	213	SINTHIOU FISSA	

<i>Distance from Dakar</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
638	396	98	KIDIRA	to Kidira. The latter is on the Falémé, which is the border of French Sudan, and it is 59½ miles from Kayes and 405 miles from Koulikoro.

Route 4
DIOURBEL-TOUBA

<i>Distance from Diourbel</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	39	DIOURBEL	Leaving the main line a little over a mile from Diourbel station, this branch line bears north-east. It maintains this general direction throughout its course, having only gentle curves and gradients. The country on either side of the line is extensively cultivated for ground-nuts.
16.5	10	34	DOULO	
29	18	102	DALA	
39	24	161	MTAKÉ	
50	31	167	TOUBA	

Route 5
GUINGUINÉ-KAOLACK

<i>Distance from Guinguiné</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	65	GUINGUINÉ	Coming out of Guinguiné by the north-west, the line curves very abruptly to run south-west. It is alongside the road all the way. At Kaolack the main station is almost on the bank of the Saloum, but just before it there is a junction with the line to Lyndiane.
22	14	12	KAOLACK	

Route 6

KAOLACK-LYNDIANE

<i>Distance from Kaolack</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	..	KAOLACK	After leaving the main line, this railway runs through its own station. It turns north-west and then west-north-west to follow the road. Five miles from the town it curves south-west to reach the landing-stage at Lyndiane.
10.5	6½	..	LYNDIANE	

ROADS

There are 984 miles (1,584 km.) of intercolonial roads, 66 miles (106 km.) of an Imperial road, and some 2,000 miles (3,300 km.) of colonial roads. The impression that these figures give, however, needs two qualifications. Firstly, there are considerable areas of the colony without roads, and, secondly, many of the roads are by no means up to the standard of their class.

Intercolonial

Intercolonial roads exist as follows: Dakar–St. Louis, Thiès–Nayes, Tambacounda–border of French Guinea, and Kaolack–frontier of the Gambia.

Itineraries. The road from Dakar to St. Louis follows much the same route as the railway. It goes along the coast to Rufisque (15 miles) and then turns inland to Thiès (44 miles). Running roughly parallel to the Atlantic coast, it goes through Tivaouane (57 miles) and Louga (121 miles) to M'Pal (144 miles). It then turns towards the sea to reach St. Louis (168 miles). This road is one of the best in the Federation. Between Dakar and Thiès the surface is tarmac and between Thiès and St. Louis it is firm laterite. A lorry takes about 11 hours to cover the whole distance.

The second road also follows the railway, except between Gossas and Kaffrine. Leaving Thiès by the east, it makes a huge curve through Diourbel (64 miles) and Gossas (80 miles) to Kaolack (107 miles). After that it follows a generally easterly direction by way

of Kaffrine (144 miles) and Kounghoul (204 miles) to Tambacounda (295 miles), an important road junction. From there it turns east-north-east to Bala (338 miles) and Nayas (416 miles). The latter is on the Falémé, which forms the boundary with French Sudan, and 55 miles from Kayes. This road is part of the great highway that connects Dakar with Zinder, but its surface varies from indifferent to bad. The section east of Thiès, for example, is sandy with deep ruts; from Kaolack to Kaffrine sand makes the going heavy and slow; and from Tambacounda to Nayas there are numerous marshes. Many stretches east of Kaolack are impracticable in the wet season.

The third road strikes south from Tambacounda, crosses the Gambia river at Diabougou (25 miles), and reaches the border of French Guinea at 108 miles, 180 miles from Labé. The Gambia is crossed by a temporary bridge, which has been built to replace the ferry that was sunk in April 1941. The surface of this road is fair, being metalled with large pieces of laterite.

The road south-west from Kaolack goes to Messira (49 miles), and then turns south to cross the frontier of the Gambia at 57 miles. From this point a road leads to Barra, 10 miles away, from where there is a ferry to Bathurst.

Imperial

The Imperial road leaves St. Louis by its suburb of Sor and goes north-east through Ross (34 miles). The Senegal river, the boundary of Mauritania, is crossed again at Rosso (66 miles), 38 miles south-west of Mederdra. There is a moderately good laterite surface across level sandy country.

Colonial

There is a long road that provides a connexion along the left bank of the Senegal from near St. Louis to Nayas. Fifty-eight miles from the former town it leaves the Imperial road. From that point it goes to Richard Toll (13 miles), Dagana (28 miles), and Podor (77 miles). After that it does not go through any large town for many miles; but at 127 miles there is a turn for Boghé (Mauritania), 4 miles distant, at 182 miles a turn for Diorbivol, 5 miles distant, and at 186 miles a turn for Kaédi (Mauritania), 16 miles distant. The road then proceeds to Matam (235 miles), an important route centre, and Bakel (328 miles), crosses the railway at Kidira (360 miles), and joins the intercolonial road at Nayas (365 miles). Almost the whole length of this road is liable to flooding.

Two other roads start from Matam. One goes south-westwards to Nelbi (56 miles) and then follows the Ferlo valley westwards to Yoroforé (98 miles), Kagnar (130 miles), and Linguéré (158 miles). It then continues westwards to Ouarkhor (166 miles), Dahra (183 miles), Coki (224 miles), and Louga (242 miles). Although ranked as a colonial road, this is in reality a desert track, much of it being across rough and waterless country. The other road from Matam is little better. It goes southwards through Malandou (31 miles) and Toubel Bali (88 miles) to Tambacounda (155 miles).

Another road that is very poor for its class begins at Dagana and goes southward across the semi-desert to Yang-Yang (68 miles), crosses the Matam-Louga road at Dahra (89 miles), and then goes through Sagata (98 miles) to the railway terminus at Touba (130 miles). From there the road has a rather better surface to Mbaké (138 miles) and Diourbel (162 miles).

The south-east of the colony is served by a road that runs from Tambacounda to Nieriko (42 miles) on the Gambia and then by way of Dialakoto (48 miles) and Badon (128 miles) to Kédougou (160 miles). From Badon a branch runs south-east for 86 miles to Sata-dougou, which is just over the border of French Sudan.

In the Casamance Territory there is a road from Ziguinchor through Bignona (16 miles), Sedhiou (74 miles), Kolda (136 miles), and Velingara (205 miles) to meet the intercolonial road at Diabougou (245 miles). A branch runs from Velingara to Médina Pagan (32 miles). Another road traverses districts on the left bank of the Casamance from Ziguinchor to Yatakounda (48 miles) and Kolda (130 miles). From Bignona a road runs north-west to Diouloulou (35 miles), crosses the frontier of the Gambia at 46 miles, and provides a connexion with Bathurst, 47 miles farther to the north. This last road is of fairly modern construction and has a tolerable surface, but the others are poor.

Bus Services

Table VI shows the bus services in 1939.

TABLE VI. *Bus Services*

<i>Route</i>	<i>Service</i>
Bambey–Fatik–Foundiougne–Kaolack	Bambey–Foundiougne: daily; Foundiougne–Kaolack: daily 15 November to 30 April, fortnightly 1 May to 14 November. Service in conjunction with the railway.

<i>Route</i>	<i>Service</i>
Thiès-M'Bour-Joal	Thiès-M'Bour: twice each weekday; M'Bour-Joal: 4 days a week 1 November to 30 June only.
St. Louis-Dagana-Matam-Kidira	Twice a week 1 December to 30 June. Journey time: 50 hours.
Ziguinchor-Sedhiou-Kolda	Dry season: daily. Wet season: as practicable and as required. Journey time: 7½ hours. Occasional extensions to Tambacounda.

SIGNALS

Cables

Dakar is connected by cable to Conakry, Fernando Noronha (Brazil), Casablanca, and Brest. In 1939 to send a message to France cost 11.70 francs (1s. 4d.) a word.

Telegraphs and Telephones

Telegraph lines run alongside the railways and the following roads:

St. Louis-Dagana-Matam-Bakel-Kidira.

Thiès-M'Bour-Joal-Fatik-Bambey.

Tambacounda-Diabougou-Médina Pakan-border of French Guinea.

Diabougou-Kolda-Sedhiou-Bignona-Ziguinchor.

Bignona-Bathurst (the Gambia).

There are also connexions across the Senegal into Mauritania.

The colony has more miles of telephone line than all the others combined. Lines are laid alongside the following roads: Dakar-Thiès-St. Louis; Thiès-Diourbel-Kaolack; Rufisque-M'Bour-Joal-Fatik-Kaolack; and Ziguinchor-Bignona-Sedhiou-Kolda. The standard of efficiency is low.

Wireless

There are stations at Dakar, Kaolack, Ross, St. Louis, Tambacounda, and Ziguinchor, of which Dakar is the only one to do any broadcasting. Details are given in Table VII. In 1939 radio-telegrams to France cost 9.75 francs (1s. 1d.) a word.

TABLE VII. *Wireless Stations*

<i>Station</i>	<i>Approx. position</i>	<i>Wave-length: long, medium, or short</i>	<i>Power in kilowatts</i>	<i>Owner and remarks</i>
Dakar . . .	14° 42' N. 17° 25' W.	9 short	Unknown	Naval station. Services with Casablanca, Fort de France, and Toulon; also with flying-boats.
Dakar . . .	14° 40' N. 17° 27' W.	3 medium 22 short	20·0 5·0 1·0 0·5 0·2 and unknown	Coast, commercial, and broadcasting stations with service to France, French colonies, and the interior. Broadcasting at 0·35 kW. midday and in the evening, except for one station at 0·2 kW. Meteorological bulletins.
Dakar Aéradio and Aérogonio . . .	14° 42' N. 17° 28' W.	4 medium 5 short	2·0 0·6	Aeronautical and direction-finding station.
Kaolack . . .	14° 07' N. 16° 07' W.	3 short	0·1	Commercial station. Interior service.
Kaolack Aéradio .	14° 07' N. 16° 07' W.	2 medium 4 short	0·1	Aeronautical station.
Ross . . .	16° 14' N. 15° 49' W.	2 short	0·01 0·01	Commercial station. Interior service.
St. Louis. . .	16° 00' N. 16° 31' W.	5 short	0·25 0·05 0·02 and unknown	Commercial and military station. Interior service.
St. Louis Aéradio .	16° 00' N. 16° 31' W.	2 medium 5 short	1·0 0·5 and unknown	Aeronautical and direction-finding station.
Tambacounda . .	13° 46' N. 13° 41' W.	3 short	0·2 0·08	Commercial station. Interior service.
Tambacounda Aéradio . . .	13° 46' N. 13° 41' W.	2 medium 4 short	0·1	Aeronautical station.
Ziguinchor . . .	12° 32' N. 16° 21' W.	3 short	0·02	Commercial station. Interior service.
Ziguinchor Aéradio .	12° 32' N. 16° 21' W.	1 medium 3 short	0·1	Aeronautical station.

APPENDIX A

Senegal and French Sudan: Principal Imports and Exports

	Unit	1935		1936		1937	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
<i>Exports</i>							
Ground-nuts in shell	tons	345,875	313,432,794	393,485	351,674,905	517,322	431,746,036
Shelled ground-nuts	"	28,166	34,333,653	60,448	73,384,546	117,015	126,720,675
Ground-nut oil	"	351	861,751	2,040	5,800,397	5,220	16,940,707
Shea butter and oil	"	2,381	3,626,922	1,462	2,228,042	3,019	5,585,371
Oilcake	"	3,793	1,312,226	7,030	2,947,107	13,015	6,004,838
Gold	lb. Troy	2,095	8,501,740	1,252	5,805,527	2,794	31,283,505
Gum arabic	tons	4,728	7,136,201	4,891	7,450,869	6,246	15,047,950
Sisal	"	3,314	4,704,078	2,859	3,287,966	3,061	4,665,701
Kapok	"	781	3,133,040	589	2,373,178	623	2,458,802
<i>Imports</i>							
Guinéés and similar cloths	1,000 m. ¹	9,445	17,259,597	11,692	22,384,097	9,662	32,197,354
Cotton cloths other than guinéés	tons	4,635	89,564,648	5,841	124,054,528	6,825	250,516,890
Ready-made clothing	"	212	4,164,653	244	7,089,014	483	21,623,794
Boots and shoes ²	pairs	78,801	7,564,540	266,787	7,900,120	388,455	10,385,313
Sailcloth, tarpaulin, and sackcloth	tons	2,287	7,988,696	3,067	10,211,697	5,496	27,423,905
Motor vehicles	Nos.	650	8,690,069	856	13,215,870	1,019	19,485,856
Iron goods ³	tons	4,729	4,468,910	7,871	7,378,240	11,279	16,992,941
Metal goods.	"	..	23,539,206	..	36,210,388	..	69,810,487
Machines and machinery	"	..	13,924,073	..	12,827,932	..	23,267,430
Rice	tons	67,976	37,381,225	88,811	49,955,535	115,875	110,839,933
Wine	gallons	1,201,375	16,457,225	1,405,096	16,084,960	1,522,544	21,185,905
Sugar	tons	13,354	16,960,069	16,721	19,877,957	19,594	31,472,641
Wheat flour	"	13,018	9,931,300	12,281	9,505,149	14,873	21,403,576
Tea	"	395	4,390,689	656	7,338,370	534	6,777,110
Oil fuel	"	390,041	53,326,699	474,199	59,813,294	670,744	133,179,986
Coal	"	105,868	13,996,162	246,690	32,327,343	371,085	47,330,724
Soap	"	1,419	3,146,582	1,659	3,800,480	2,067	6,811,761

¹ 1,094 yards.² Mainly *babouches* (Moorish heel-less slippers).³ Including rails for railway lines.

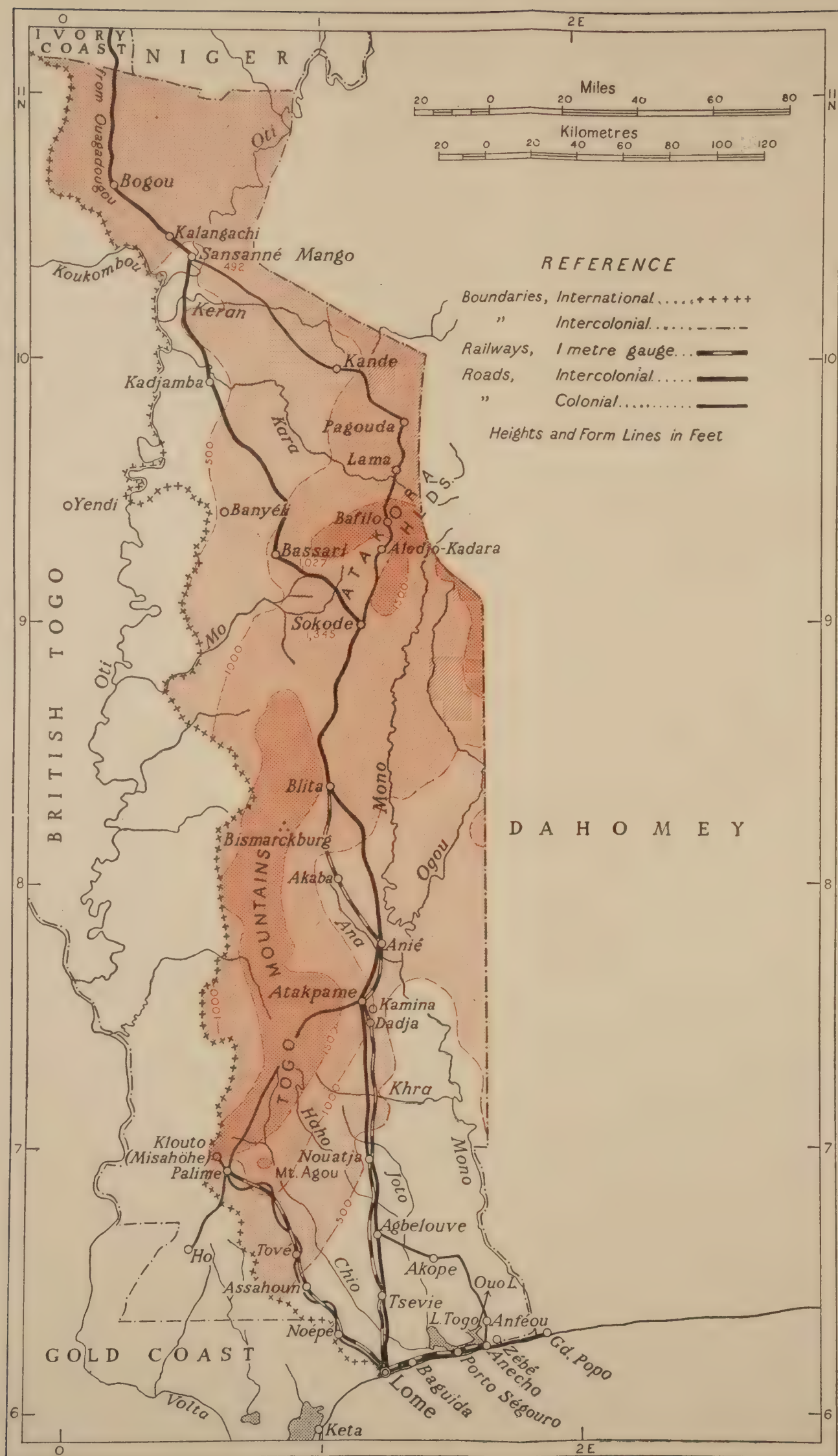


FIG. 55. *Togo*

CHAPTER IX

TOGO

I. GENERAL

Area: 21,973 square miles. Population (1938): 780,699. Density per square mile: 35.48. Capital: Lome.

TOGO is not a colony but a Mandated Territory; and from this distinction spring several important differences. There are, for example, no customs barriers against foreigners and no military service for natives. In particular, the obligation to present an annual report to the Council of the League of Nations makes available much information that is lacking for the colonies. The *Annual Reports* for Togo and the Minutes of the Permanent Mandates Commission are published and can be read by anyone interested.

At the same time, for day-to-day purposes the distinction is not very real. Togo has the same framework of government as the colonies, the same type of officials, and the same general policy.

It is by no means a large country. It stretches from 6° 07' N. to 11° 10' N. and from 0° 09' W. to 1° 50' E., and it has an extreme length of 300 miles and an extreme width of 90 miles.

Boundaries. It has already been seen (p. 231) that the Ivory Coast, the Gold Coast, British Togo, and French Togo all meet at 11° 10' N., 0° 09' W. From this point the boundary between French Togo and the Ivory Coast runs east-south-east for 43 miles. It then makes a loop to the south, but subsequently follows the eleventh parallel to the Pendjari river. The boundary, now with Dahomey, turns a little west of south and maintains this general direction as far as a village 18 miles east of Sansanné Mango. It then runs straight south-east for nearly 50 miles, and afterwards goes southwards in a rather irregular line until it reaches 7° N. This line of latitude forms the boundary due west for 5 miles, and then the main channel of the Mono does so for 75 miles. The river flows into the coastal lagoon 2 miles north-west of Grand Popo, and from here the boundary runs westwards and parallel with the coast until it turns south to meet the Bight of Benin only 2 miles east of Anecho.

The frontier with the Gold Coast leaves the sea at 1° 13' E., and it runs in a generally north-westerly direction by means of a series of

loops and angles. British Togo is reached at $6^{\circ} 20' \text{ N.}$, $0^{\circ} 54' \text{ E.}$, but the frontier between the two mandated territories follows no discernible physical features. At latitude 7° N. the north-westerly direction is changed for a more northerly one, and hills such as Mt. Sassaboula and rivers such as the Mo are occasionally used to mark the twisting frontier. From $9^{\circ} 41' \text{ N.}$, $0^{\circ} 22' \text{ E.}$ the Oti is followed upstream as far as a point 10 miles south-west of Sansanné Mango. The Koukombou, a tributary of the Oti, is followed upstream for 18 miles, and after that the frontier winds its way north-west, north-east, and north-west until it meets the Ivory Coast.

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2. PHYSICAL DESCRIPTION AND GEOLOGY

A COMPLEX ridge of high land crosses the territory from south-south-west to north-north-east and separates the lowlands of the Oti valley in the north from those of the coastal rivers in the south. In the north it is known as the Atakora highlands and in the south as the Togo mountains. The whole of this range is made up of rocks of Algonkian (late pre-Cambrian) age, consisting of quartzites, mica-schists, and other highly altered sediments.

The lagoons of the coastal depression link those of the Gold Coast with those of Dahomey. Lake Togo, the largest of them, receives the variable waters of several rivers that drain the south-eastern and eastern plains. These plains are part of the Archaean platform, being composed chiefly of gneiss. Many masses of serpentine and amphibolite are present, and there are later intrusions of granite, diorite, and gabbro. For between 30 and 40 miles inland these older rocks are covered by flat bedded strata of Tertiary or Quaternary age. They form a plateau which, like La Terre de Barre in Dahomey, has been dissected into blocks by the major river valleys. Impure fossiliferous limestones of Eocene age are exposed in the bed of the Mono at Topli, but the shallower strata are mainly clays, loams, and sands. These have been derived from the weathering of the older mountain

ranges in the pluvial periods of Pleistocene times. Everywhere the surface deposits are intensely lateritized to a mantle of red earth or gravel 15–25 feet thick. Water is available from many wells of medium depth. To-day this plateau has largely been cleared of its natural vegetation, and it is densely settled and closely cultivated. There is a gradual rise to the abrupt eastern edge of the highlands, which runs from the outlying peak of Mt. Agou to Atakpame and Sokode. The rivers vary with the seasons from sluggish streams to torrents. The upper Mono and the Ogou meander in wide, flat valleys, but the intervening spurs are scrub-covered country, which is broken by isolated tors.

The highlands form the central and highest part of a range that runs from the south-east of the Gold Coast to the north of Dahomey. It enters the colony near Klouto and leaves it at latitude 10° . Everywhere the mountains are bold and picturesque with deep, forested valleys, isolated hills, and sheer slopes. In the south the main range is flanked by two smaller and lower ones, the western of which is in British Togo. The high plains between the inner and the outer mountains have been deeply scored by rivers. These have also cut valleys through the eastern range and so dissected it. All these ranges have been further complicated by such upheavals as that which resulted in Mt. Agou (3,366 ft.), a magnificent peak. The whole highland mass is at its widest and most complex west of Atakpame, and much of its drainage is westwards. The western range re-enters the Territory near Bassari, and its isolated massifs and domes are well developed. The rocks are mainly quartzites and sandstones, but in some places there are beds of quartzose haematitic ironstones up to 30 feet thick and with an iron content of 60–65 per cent. These strata are believed to be of Lower Palaeozoic age.

Northwards from Atakpame the high ground narrows and slopes become gentler. A dissected plateau lies west of where the railway has been built, and it falls to its lowest point some 20 miles south-west of Sokode. North of that town there is a wider plateau, but only its eastern edge is well defined. On the west the headwaters of the Mo and of the Kara have eroded it into a series of blocks. Northwards again the hills rise to become the Atakora highlands.

Middle Palaeozoic sandstones and shales compose most of the lower land of the north. In them the Oti (the continuation of the Pendjari) has cut a wide, flat valley, which is liable to floods. Near the northern boundary an eastward extension of the Gambaga plateau causes some hilly country in the neighbourhood of Bogou.

3. THE COAST

THE coast extends for 31 miles along the Bight of Benin. It is singularly smooth and unindented, and it has a sandy shore that nowhere rises more than 10 feet above sea-level and that is seldom more than a few hundred yards wide. This shore is backed by lagoons and marshes, and there are no natural landmarks visible from ships at sea. The lagoons themselves have shores of silt, mud, or red lateritic clay.

The Guinea current sets eastward throughout most of the year, and for half the year there is a heavy irregular swell in the bight. Surf is always heavy, and landing is everywhere impossible except by surf-boats or canoes.

Detailed Description

Lome (p. 512) is $1\frac{1}{4}$ miles east of the Gold Coast frontier, and from it the railway and the intercolonial road run in close company with the coast. The road has a sandy surface, which in the wet seasons is capable of bearing only light traffic, and it goes through many groves of coconut palms. Baguida, 8 miles east-north-east of Lome, is a minor trading centre and has a few factories. It is $4\frac{1}{4}$ miles south-west of the corner of Lake Togo, a large lagoon which receives the waters of the Chio, the Lili, and other rivers. Eleven miles east-north-east of Baguida is Porto Ségouro, the largest village on the coast. It is near the south-east corner of Lake Togo, from which a narrow lagoon extends parallel to the coast into Dahomey. Several streams flow into this lagoon from the north, notably a wide one called the Ouo lagoon, but its depth in the dry seasons is rarely more than 2 feet. In the wet seasons, however, it is very much deeper. Porto Ségouro is $8\frac{1}{2}$ miles from Anecho (p. 513), itself only 2 miles west of the Dahomeyan boundary.

4. CLIMATE

Meteorological Stations mentioned in Text and Tables

	Latitude N.	Longitude E.	Altitude in feet
Sansanné Mango	10° 21'	0° 30'	492
Pagouda	9° 45'	1° 20'	1,362
Aledjo-Kadara	9° 15'	1° 16'	c. 1,200
Bassari	9° 15'	0° 50'	1,027
Sokode	8° 58'	1° 09'	1,345
(Bismarckburg)	8° 12'	0° 51'	2,330)

				<i>Latitude N.</i>	<i>Longitude E.</i>	<i>Altitude in feet</i>
Atakpame	.	.	.	7° 32'	1° 09'	1,129
Klouto	.	.	.	6° 56'	0° 36'	1,929
Nouatja	.	.	.	6° 56'	1° 11'	492
Palime	.	.	.	6° 54'	0° 38'	751
Lome	.	.	.	6° 08'	1° 13'	34

THE coastal area is adequately served by a meteorological service started by the Germans and since expanded by the French, but the north was neglected at first, and even to-day little is known of its climate.

The south has a four-season regime of two wet and two drier periods, the former occurring just after the sun has passed overhead. Under the influence of south-west winds it is constantly hot and humid, but there is a much smaller rainfall than is usual in these latitudes. Heavier rain and a pleasant freshness are to be found among the highlands of the west. Inland, to the north of latitude 7°, the year is divided into two definite seasons, the one dry, with north-east winds, little cloud, and a large range of temperature, and the other wet, with south-west winds, more cloud, higher humidity, and a smaller range of temperature. The duration of the former season and the intensity of its phenomena increase to the north, while those of the latter decrease.

Pressure (Fig. 58)

Twice a year the equatorial low-pressure belt passes across the territory. In January it lies just to the south of the coast, and pressure is then highest over the north. As it moves northwards in the early part of the year, pressure falls in the north in front of it and rises in the south behind it, until it passes northwards into Niger. In July there is a fairly steep gradient from the coast to the northern boundary. By September pressure is falling again before the retreating low-pressure belt. In December there is a slight rise in the north, but in the south the fall continues until the January position is again reached. The annual range is only 4 or 5 mb. at Lome and farther north is even less.

TABLE I. *Mean Daily Pressure (millibars) at station level, corrected for gravity to latitude 45°*

<i>Station</i>	<i>J.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>J.</i>	<i>J.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>	<i>Year</i>	<i>Annual Range</i>
Atakpame	970	969	969	969	970	972	973	972	971	971	970	970	970·5	4
Lome	1009	1009	1008	1009	1010	1013	1013	1012	1011	1011	1009	1009	1010	5

In the south the diurnal range is almost the same as the annual, but in the north it is probably greater. Maxima occur at 10.00 a.m. and 10.00 p.m. and minima at about 4.00 a.m. and 4.00 p.m. A temporary fall accompanies tornadoes, but irregular variations are otherwise very rare.

Winds (Fig. 23)

Surface Winds. The main winds are the dusty, dry, north-easterly harmattan and the moist south-westerly monsoon. The period during which each is dominant varies with the latitude, since they blow respectively on the north and south of the equatorial low-pressure belt.

The monsoon is felt in every month on the coast, but in December and January it is relatively feeble and interrupted at intervals by the harmattan with spells of dry, fresh weather. Inland, as latitude increases, so the monsoon period starts later and lasts for a shorter time, with the harmattan season inversely proportionate. In the centre of the territory the monsoon sets in about March and lasts until October. At Sansanné Mango the corresponding months are April and September. The mean velocity of both currents is 5-10 m.p.h., but the monsoon is stronger when it is advancing. In the north speeds are rather less, and calms are more frequent.

No details are available as to diurnal differences, except that the coast benefits from a sea-breeze, which displaces the nocturnal land-breeze within an hour or two of dawn and which, even in the face of the harmattan, may carry its freshness inland some 20 miles.

Since the monsoon is wedge-shaped in vertical section, being thinnest at its northern edge, its depth over the territory varies through the year. In January it is only some 3,000 feet deep over Lome, even when established fairly firmly. When it has reached central Togo in April it may extend up to 6,000 feet over the coast. In August, at its greatest extension over the continent, it is 3,000 feet deep over the north and 10,000 feet over the coast. In the latter half of the year the current becomes shallower as it retreats. The harmattan is similarly wedge-shaped, thinning southwards, and undergoing the same changes as it advances and retreats. It is, however, rarely deeper than 3,000 feet, although its upper level is not easily distinguished from the easterly winds above it. From these generalizations daily and even hourly variations are considerable and common.

The belt along which monsoon and harmattan meet is an area of great turbulence, and inversions are frequent. Tornadoes are often experienced in this belt, as prelude to both the wet and the dry season. They occur at irregular intervals, but they always blow up from the east. They are characterized by very violent winds, by thunder and lightning, and by heavy rain, although those which follow the wet season are sometimes rainless.

Upper Winds. Above all these surface currents are easterly winds which are, like the harmattan, dry and dusty. When they lie over the monsoon their lower level is determined by the line of cumulus clouds which rise into them from the latter. Apart from their more easterly direction, they are less easy to distinguish from the harmattan. They also are wedge-shaped in vertical section, extending in January to about 10,000 feet over the north and to 20,000 or 25,000 feet over the coast, and in July to well above 30,000 feet over the whole territory. Speeds of 5-15 m.p.h. are commonest, but high winds will sometimes be met in the upper levels.

A light westerly current blows above the easterlies, its base often marked by cirrus. No soundings have yet reached its upper limits.

Rainfall, Cloud, and Thunder

Rainfall (Fig. 59). The coast lies within the dry belt that stretches from Cape Three Points to Nigeria, and totals are, therefore, small. There are, however, two wet and two dry seasons. Farther north, while the mountains attract more rain, the two wet seasons merge into one.

The four-season belt extends approximately as far north as latitude 7° . Its main dry season lasts from December to March and its main wet season from April to June. From July to September a dry period intervenes, with August almost rainless, to be followed by a second, lesser, wet season in October and November. Totals are higher to the west and inland: Klouto, for instance, has 61 inches, Nouatja 50 inches, and Lome only 31 inches.

The figures for Atakpame hardly show the double maximum, and from there northwards there is but one wet season, whose length and intensity decrease steadily. At Sokode, for example, the rains are ushered in by tornadoes in late March, are well established by May, and end in late October. At Sansanné Mango they do not start until late April, are only established by June, and end in early October.

TABLE II. Mean Rainfall

R = Rainfall in inches. D = Number of rain-days

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Sansanné Mango	R	0.16	0.08	2.20	2.32	2.95	5.75	6.50	11.81	8.94	2.76	0.08	0.28	41.83
	D	0.2	0.5	2.0	5.0	9.0	9.0	11.0	17.0	19.0	8.0	0.4	0.1	81.2
Bassari	R	0.24	0.31	1.50	3.47	5.55	5.87	5.83	7.40	11.10	7.52	0.87	0.39	50.05
	D	0.6	1.0	4.0	8.0	13.0	13.0	14.0	13.0	20.0	19.0	7.0	1.0	113.6
Sokode	R	0.08	0.43	2.05	3.66	6.34	5.91	7.72	10.39	9.80	5.00	0.43	0.28	52.09
	D	0.5	1.0	5.0	9.0	11.0	13.0	17.0	19.0	18.0	11.0	2.0	1.0	107.5
Atakpame	R	0.80	1.70	2.60	5.60	6.0	7.20	8.40	6.80	7.20	5.50	1.10	0.90	53.80
	D	2.0	4.0	8.0	10.0	11.0	14.0	16.0	16.0	16.0	12.0	3.0	2.0	114.0
Klouto	R	0.60	1.70	3.90	5.40	6.70	10.50	7.90	5.40	8.90	6.20	2.70	1.90	61.60
	D	1.0	2.0	4.0	6.0	9.0	12.0	7.0	3.0	7.0	6.0	3.0	1.0	61.0
Lome	R	0.60	0.90	1.80	4.60	5.70	8.80	2.80	0.30	1.40	2.40	1.10	0.40	30.80
	D	1.0	2.0	4.0	6.0	9.0	12.0	7.0	3.0	7.0	6.0	3.0	1.0	61.0

Persistent rain is nowhere common. Most rain falls in heavy showers and after midday, but even in the wettest months fine days separate the wet, especially in the north. Variations from the means are considerable, as are local differences due to peculiarities of site.

Cloud. Variations in cloud amounts are small in the south. The scanty records for Lome suggest that there is little of the usual conformity with the rain, although the highest figures, 7-tenths, are registered in June. Atakpame, on the other hand, shows more cloud during the wet season, and, were records available for the north, an even more obvious increase in both the annual and diurnal range would probably be evident. There are certainly more clouds in the mountains, and their base is frequently below the summits. The harmattan is normally almost cloudless.

The commonest clouds are cumulus, with cumulo-nimbus giving the rain. The normal base level is about 2,000 feet, but it may be only a few hundred feet high during heavy rain.

Thunder. The heavy rainstorms of the south are often accompanied by thunder, and so the frequency of these storms at Lome shows a double maximum. Farther north thunder is more commonly associated with tornadoes, and, as a result, Atakpame shows a double maximum at the beginning and end of the rains. Coastal stations suffer less from these storms than do inland towns, and in the north interference from them is considerable.

Temperature and Humidity

The lack of rain on the coast makes conditions for Europeans less unpleasant here than elsewhere on the Guinea coast, but both temperature and relative humidity are high all the year. A few miles inland, where the sea-breeze has disappeared, there is little relief from the steamy heat, but highland stations along the western border have a greater daily range and are fresher and healthier. Seasonal and diurnal changes are greater farther north.

Temperature. Over the whole country maxima are registered towards the end of the dry season, that is to say, about March, and minima in August.

Mean daily maxima on the coast vary by no more than five degrees on either side of 84° , rising to 88° in March and falling to 79° in August. Night temperatures vary even less: only three degrees separate the March maximum of 74° from the August minimum of 71° . The absolute range is from 102° to 62° , but such figures are rare, and normally there is a depressing monotony about the climate.

TABLE III. *Means of Daily Maximum and Minimum Temperatures*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Sansanné Mango . . .	94 65	99 69	100 75	98 78	95 76	90 73	86 72	85 72	86 71	91 71	97 67	95 65	93 71	15 13
Sokode	92 67	95 71	94 72	92 72	89 71	87 70	83 69	81 69	82 69	87 69	91 67	91 66	89 69	13 6
Atakpame	90 70	92 70	93 71	89 70	88 70	85 69	81 68	80 68	82 68	86 69	89 69	80 68	87 69	13 3
Nouatja	93 69	96 72	96 72	93 72	91 72	88 71	86 71	86 70	87 71	89 71	92 70	93 68	91 71	10 4
Lome	85 72	87 74	88 74	86 74	86 74	83 73	80 71	79 71	80 72	83 72	86 73	85 72	84 73	9 3

Even a few miles inland greater variations are already appearing. Maxima at Nouatja are higher than those of Lome by some 10° in the dry season, and by 5° or 6° in August: minima are two or three degrees lower all the year. Atakpame, over 1,000 feet above sea-level, shows a similar annual range. Records kept between 1888 and 1894 at Bismarckburg, over 2,000 feet high, showed the following means: March, maxima 89.2° , minima, 70.9° ; August, maxima 80.2° , minima 69.6° ; absolutes, 99.7° and 52.7° .

Sokode, at roughly the same height as Atakpame, shows much the same temperature range. Sansanné Mango, more typical of the northern lowlands, shows greater variations and a second maximum after the rains. In March the daily range averages 25° , but in August, when the rainfall has lowered the temperatures, it is only 15° .

In the mountainous country of the west the site of a station is of greater importance and local differences are considerable. Apart from this, however, temporary and irregular variations are slight, but tornadoes and rain lower the temperatures abruptly by a few degrees.

Humidity. In the south vapour pressure is always high, and the mean relative humidity is constant at 80–88 per cent., being rather higher in the middle of the year. The relative humidity increases slightly a few miles inland.

TABLE IV. *Mean Relative Humidity (percentages)*

Station	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year	Annual Range
Atakpame	56	59	65	76	76	79	86	87	86	81	74	64	74	31
Lome	81	83	82	82	82	86	88	88	87	84	83	82	84	7

Atakpame shows seasonal changes corresponding to the rainfall, and farther north the diurnal range progressively enlarges, while between November and March increasingly lower figures are registered with the harmattan. During the dry season figures as low as 50 per cent. in the morning and 40 per cent. in the afternoon are common. The north is then healthy enough for Europeans, but in the wet season conditions strongly resemble those on the coast.

Visibility

Since the harmattan carries dust, haze is experienced in varying degree during the dry months, and visibility is everywhere best in the wet season. In the south, therefore, it is poor only on rare occasions between December and February and in the north from October to April and less rarely.

Early morning fogs, commonly known as 'smokes', form when the harmattan reaches the coast. Fog and low mist are more general in the western highlands. In the north, in addition to the dry-season haze mentioned above, bush fires reduce visibility locally at the end of the dry season. Their smoke may rise to 3,000 feet. In the wet season rain may everywhere bring visibility down to a few yards.

The easterlies, continental in origin, carry a dust haze. They are normally cloudless, but, when they lie above the monsoon, they account for a belt of inferior visibility above the clear surface layers of the monsoon.

Swell and Surf

Swell (Appendix II) is generally from the south-west, the south, or the south-east. Days with no swell are fairly frequent except when the monsoon is at its height. Heavy swell is rare, occurring only between June and September. It has already been seen that the coast is no exception to the heavy surf that is the curse of the gulf of Guinea.

Meteorological Services

The first meteorological station was established at Bismarckburg in 1888, but no other station functioned regularly until 1900. To-day the principal station is at Lome, whose reports are included in the synoptic broadcasts from Abidjan. The other main stations are at Aledjo-Kadara, Atakpame, Klouto (Misahöhe), Nouatja, Pagouda, Palime, Sansanné Mango, and Sokode. All are fully equipped by West African standards. In addition, 28 stations with apparatus for recording the rainfall are scattered over the territory.

5. VEGETATION

MOST of the territory is in the Guinea subzone of the grass-woodland zone, the remainder being in the Sudan subzone. Climatic conditions do not favour the development of true rain-forest, and, although forest remains are numerous, they are of a mixed deciduous type rather than of an evergreen. What forest there was has been easier to destroy than in the Ivory Coast or Southern Nigeria, for it has shown smaller powers of recuperation. There are, however, more and finer forests in Togo than in Dahomey, owing to the Togo mountains and their greater precipitation.

From the northern boundary to the Atakora highlands the vegetation is Sudanese and the country is badly deforested. Small clumps of acacias, which flourish particularly in the drier areas, are found in combination with members of the Combretaceae family (species of *Combretum*, *Terminalia*, *Guiera*, and *Pteleopsis*). Here, as elsewhere in the Sudan subzone, the silk-cotton tree and the shea-butter tree are relatively abundant.

South of latitude 10° the Sudan subzone gradually gives place to the Guinea, and the country becomes better wooded. Large areas carry two trees (pp. 28-9) of special local importance, the 'Sau' (*Berlinia doka*) and the 'Kosan' (*B. dalzielii*). Another hardy tree, smaller than the 'Sau', but suckering freely and also forming clumps, is the 'Somon' (*Uapaca somon*), which is especially abundant on the massif between Sokode and Bassari. This region is perhaps the richest in isolated remnants of forest, although the finest are in the south of the Togo mountains near Klouto.

The uplands of the territory deserve a special note. On their plateaux forests have been destroyed to give place to plantations of cocoa or coffee. On their slopes, however, along streams, and on moist and fertile soil fringing forests or forest islands still remain. Such trees as the broad-leaved mahogany (*Khaya grandifoliola*) are found among numerous other trees and shrubs. Woody climbers of the rain-forest and savanna types are also common, as well as 'ripi-cole' species peculiar to such communities. Since European intervention began, these islands of deciduous forest have been much reduced in size. In the fringing forests the trees worthy of mention are African teak (*Chlorophora excelsa*), the African tulip tree (*Spathodea campanulata*), the West African cedar (*Entandrophragma cylindricum*), the pink African cedar (*Guarea cedrata*), the shingle wood (*Terminalia superba*), and the broad-leaved mahogany.

South of Atakpame and east of the mountains the lowlands are covered by a dry type of grassland with scattered trees. The grass may be from 8 to 10 feet high, and it is burnt at the end of each dry season.

Towards the coast ground not under cultivation is mostly poor grassland with a sparse woody vegetation of thorny shrubs and occasional baobabs (*Adansonia digitata*) and silk-cotton trees (*Ceiba pentandra*). The rivers and streams frequently have well-developed fringing forests with a mixture of rain-forest and mixed deciduous forest types. Some of these fringing forests have a width of 500 feet on each bank and consist of fine tall trees. Bamboos and screw pines (*Pandanus*) are usually present, and there is often a thick undergrowth with ferns and plants of the ginger family dominant. Sometimes, as, for example, in the forests that fringe the Khra, the tree crowns are united by woody climbers to make a roof like a tunnel. Oil palms are also very numerous near the rivers, but not in the denser parts away from them.

7. HISTORY

Before the German Occupation

In the Ewe language 'Togo' means 'behind the sea', and it was the name given to the lake opening out of the lagoon behind Porto Ségouro and to a village on its banks. This name was extended to the whole country from the fact that Nachtigal's first treaty in 1884 was made with the chief of this village. To some extent, therefore, Togo shares the felicity of those lands that have no history.

There were no large well-organized native states. In the north the Dagombas, Mampruis, and other tribes of what are now the Northern Territories of the Gold Coast spread east of the Oti. Farther southwest Twi- and Ewe-speaking immigrants from the Gold Coast formed the bulk of the population and on the coast they founded numerous petty communities. In the east the country round Atakpame and south to the sea was peopled by fugitives from the tyranny and exactions of Dahomey. The only two states, however, which showed any political organization were at Anecho (Little Popo), which was founded towards the end of the seventeenth century, and at Atakpame itself. In both these places a stream of emigrants from Dahomey established their authority over the original inhabitants.

During the eighteenth and nineteenth centuries the country was subject to the influence of the powerful kingdoms of Dahomey and

Ashanti. The king of the former made the eastern half a hunting-ground for slaves, who were sold to Europeans at Ouidah. About 1750 the two empires clashed somewhere to the east of the Volta, when the Ashantis suffered a signal defeat.

There were no European settlements before the middle of the nineteenth century; yet traces of Portuguese influence may be seen in such names as 'Popo' and 'Porto Ségouro', and there is little doubt that the coconut palm was introduced by the Portuguese. By 1775 Danish merchants, whose headquarters were at Christiansborg (Accra) on the Gold Coast, were shipping slaves from Anecho, and no doubt the commercial possibilities were explored by other European nations from their headquarters at Elmina, Cape Coast, or Ouidah. In 1767 the Frenchman Gourg received instructions to establish a station at Aflao (now in the Gold Coast) or Anecho, and it is possible that a French post existed for a short time at one or other of these places. No permanent settlement, however, was established till 1856, when the Bremen firm of Victor & Son set up at Grand Popo. In 1864 Anecho was ceded to France, and the following year French firms were set up at Porto Ségouro. A French treaty with Porto Ségouro in 1868 was not followed by active occupation, but in 1883 French protectorates over Grand Popo, Anecho, and Porto Ségouro were established by treaty with the chiefs of these places. These protectorates were to have a very short life.

About 1880 other German firms left the Gold Coast to escape the British customs duties and set up in Togo, chiefly at Anecho, but also at Baguida, Porto Ségouro, and Grand Popo. By 1883 trade treaties had been made with several chiefs, and trade consuls appointed by the German Government. In 1884 the export trade of Togo was equally divided between British, French, and German houses. Disputes between the various local firms were frequent, and rivalry was intense.

The German Colony, 1884-1914

Although a protectorate might easily have been established in these parts, Great Britain showed no desire to extend her political responsibilities. The young Empire of Germany, however, was thinking not only of trade, but of the prestige which colonial possessions and a place in the African sun would bring. These ambitions were evidenced by the foundation in 1882 of the *Deutscher Kolonialverein*. In February 1884 Bismarck was persuaded by the merchants of Hamburg and Bremen to intervene at Anecho. The cause of the

intervention was a disputed succession to the local chiefdom. The gunboat *Sophia* was sent, and her captain, landing 100 men, arrested the pretender, William Lawson, and five of his supporters. Lawson claimed to be a British subject and was put ashore at Lagos, but the others were taken to Germany. Some months later, duly chastened, they returned with Dr. Nachtigal. Notwithstanding this display of German might, the troubles continued. The legitimist party, alleging British interference, presented a petition to the German consul, praying for the emperor's protection. Bismarck's next step was to dispatch Dr. Nachtigal in the gunboat *Möwe*, ostensibly to visit and report on the German trade settlements on the West Coast. He had the superb and successful effrontery to ask for the aid of local British officials in this enterprise. On 5 July 1884 a treaty was signed with the chief of Togo, by which his territory 'from the eastern frontier of Porto Ségouro to the western frontier of Lome' was placed under the protection of Germany. Other treaties followed, and on 15 October the German Ambassador notified the British Government that the 'Togo tract, with the harbours of Lome and Baguida, has been placed under the protection of His Majesty the Emperor'. This was the first annexation made in Africa by the German Empire.

Extension and Boundaries. This *fait accompli* was recognized by the Powers at the Berlin Conference, and, by a convention signed on 24 December 1885, France abandoned all claims to Anecho and Porto Ségouro, and the boundary was fixed on the coast between Togo and Dahomey. In 1887 this was delimited as far north as latitude 9° ; the Franco-German Agreement of 23 July 1897 carried it to latitude 11° N.; but the last part was not finally approved until the Franco-German Declaration of 28 September 1912. A preliminary agreement with Great Britain was signed on 14 July 1886, fixing the frontier between Togo and the Gold Coast.

The seat of government was first at Baguida and then at Zébé, but in 1897 it was transferred to Lome. This was a healthier spot than either of its predecessors and with better access to the interior of the country. The administration was first entrusted to Ernst Falkenthal with the title of Imperial Commissioner. In 1893 the higher title of *Landeshauptmann* was conferred on von Puttkamer. From 1898 the title of Governor was borne by von Kohler and his successors.

Immediately after their occupation of the coast the Germans started exploration and penetration by means of expeditions, partly military and partly scientific. Except for a fringe along its western border which had been penetrated by the British from the Gold Coast, the

country was completely unknown. In 1887 Falkenthal made a treaty with the chief of Palime, and the next year von François marched through to Salaga, then not definitely part of British territory. Bismarckburg was founded in 1888, to be abandoned six years later in favour of Kete Krachi on the Volta. By 1890 the Dagomba and Mamprusi countries had been explored as far north as Yendi and Gambaga. There was very little opposition from the natives to the German occupation in the early periods, largely because there were only petty states, incapable of combined resistance. Germany experienced, however, some trouble over boundary and trade questions with her European neighbours, especially with the British. This was not lessened by her natural desire to export from its own shores the produce of her own colony, which had hitherto found its outlet either through Dahomey or the Gold Coast.

Under the agreement of 14 July 1886 the frontier between Togo and the Gold Coast had been marked only by a post erected on the beach a little west of Lome. Falkenthal considered that this did not prevent him from concluding treaties with the chiefs to the north of Keta, a process which, if continued, would have left to Great Britain only the strip of beach between Lome and the mouth of the Volta. To put an end to this uncertainty and to prevent a recurrence, an agreement, founded on the recommendations of local commissioners of both nations, was entered into by exchange of notes on 12 and 14 March 1888. This carried the frontier inland to a point on the Volta about 70 miles from the coast. From there the Volta was to be the boundary of the respective spheres of influence as far north as the mouth of the river Daka, although neither Power had as yet established protectorates. From this point there was established a neutral zone extending as far as latitude 10° N., in which the two countries agreed to abstain from establishing protectorates. In this neutral zone fell the Gonja (Salaga) and the bulk of the Dagomba countries, though farther to the north the Mamprusi (Gambaga) were left open to the attentions of either Power. The 'Heligoland' Treaty (1 July 1890), while it affected the frontier on the Volta in a few minor particulars, left the neutral zone itself untouched. The latter, however, was divided between the two Powers by the 'Samoa' Treaty of 14 November 1899. The western frontier of the German colony was finally settled by the Anglo-German Convention of the 25 June 1904, which carried the boundary to $11^{\circ} 10'$ N. As a result, the Dagomba country was cut in two, Yendi the capital being placed under German control, but Gonja and Mamprusi fell in their entirety to the Gold Coast.

By a previous agreement of 24 February 1894 Togo and the adjoining British territory east of the Volta had been constituted a single customs area, irrespective of international frontiers. This Customs Union continued in force until 1904, when Germany, wishing to impose protective duties in favour of Lome and the Lome-Palime railway, gave notice to put an end to it.

The wisdom of establishing a neutral zone was exemplified by the scrambling competition for treaties which went on elsewhere in the nineties between Great Britain, France, and Germany. It took place mainly outside Togo, but Sansanné Mango (pp. 50-1) was the object of both British and French desires before a German station was set up there in 1896. In the next year posts were established in Bassari and Sokode, thus completing the framework of the administrative pattern as it stood to the end of German rule. In the north the Dagombas, Konkombas, and Cabrais had to receive sharp lessons in 1897-1898 before they recognized the benefits of German *Kultur*. On the whole the natives there acquiesced much more readily in German rule than was the case in the Cameroons, so that in 1900 it was found possible to reduce the military forces by nearly half. Even so, pacification was hardly complete by 1914, and it was still necessary for a European to obtain special leave before visiting the extreme north of the colony.

Administration. The details of German government properly belong to Section 9, but it may be said here that Togo was not ill governed. The natives were treated firmly but not cruelly, and the material prosperity of the colony made a rapid advance. So much was this the case that Togo was the only overseas possession of the Second Reich that did not normally receive a grant-in-aid. Judicial, agricultural, health, and educational services were set up and maintained on a scale comparable with those of the neighbouring British territories.

The Conquest

The powerful wireless station at Kamina near Atakpame was completed early in 1914. This was able to communicate direct with Germany by night, as well as with Windhoek in German South-West Africa and with Tabora in German East Africa. It was intended to be the principal German distributing station in Africa, as well as one of the major links in the chain of wireless stations joining German possessions all over the world. Its importance to Germany at war could hardly be over-estimated.

In the last days of July 1914, when it was doubtful whether Great

Britain would enter the struggle, German forces in Togo were being prepared to attack Dahomey. Immediately Great Britain's attitude was clear, however, the Germans proposed to both French and British neutrality in West Africa 'in the interests of the natives, and to show the unity of culture of the white races'. Needless to say, these disingenuous overtures met with no response. The Germans might have been able to have preserved Togo and their world communications for some time against the French alone: against the British and French combined this was impossible. In the colony there had been no conscription, and its armed forces consisted only of a force of police, primarily intended for preserving internal peace. Its officers were seconded army officers, who gave it a definite military training, a great feature of which was the emphasis laid on shooting. Recruits were enlisted for five years, which could be extended, and since 1910 a reserve had been built up. On mobilization the whole force passed under army control. Together with time-expired members of this force, frontier guards, and European reservists trading in the country, Togo could call upon about 1,500 armed men. Against these Dahomey could mobilize 850 regular troops and 1,000 auxiliaries, with about the same number of carriers. The Gold Coast Regiment of the West African Frontier Force sent a battery and six companies of infantry to take part in the operations. This was enough to turn the scale.

On 6 August Captain Barker of the Gold Coast Regiment was sent, under a flag of truce, to Lome, 15 miles east of the frontier. He explained the hopelessness of the German position and demanded the surrender of Togo. Von Doring, the acting Governor, asked for and received a 24 hours' armistice, and when Captain Barker returned on the evening of the 7th, he found that the town had been evacuated by German troops, and that the officer left in charge had instructions to surrender the colony south of a line drawn 74 miles north of Lome. Von Doring himself with the German troops and many civilians had retired by railway, having received instructions from Germany at all costs to defend Kamina. Meanwhile French troops under Commandant Maroix had crossed the frontier from Dahomey, and seized Anecho on the 6th and the village of Togo on the 8th. By the 10th the whole of the south-eastern area of the colony had been occupied by French troops without opposition. As at Lome, the Germans had retired with the intention of concentrating farther north. On the departure of the Germans, Anecho had been pillaged by the natives, who welcomed the appearance of the French with enthusiasm. At Porto Ségouro the chief proudly displayed a silver-mounted message-

stick, which had been presented to his ancestor in 1870 as an acknowledgement of services rendered to France.

Up to this time the two allied forces had been working independently, but arrangements were made by which Captain (temporary Lieutenant-Colonel) F. C. Bryant was to command the whole of the southern force. He landed at Lome on the 12th with 57 European officers and N.C.O.s, between 500 and 600 native rank and file, and some 2,000 carriers. A French contingent, under Captain Castaing, which had formed part of the force invading from Dahomey, joined Bryant's column on 18 August. This force pushed along the railway in pursuit of the Germans, and first made contact with them on the 15th. On the 22nd a stubborn resistance was offered at the Khra river, the railway bridge over which had been blown up. After fighting all day and suffering 78 casualties, 17 per cent. of the force engaged, Bryant's troops failed to dislodge the enemy, whose casualties were much lighter. During the action Lieutenant Thompson, temporarily in command of a company of French troops, made an unsuccessful attempt to rush the enemy trenches. Afterwards his body was found, surrounded by the bodies of one Gold Coast N.C.O. and 12 Senegalese tirailleurs, who had died following their unknown officer.

This engagement was the turning-point of the campaign. During the night the allies entrenched themselves in preparation for renewed fighting; but in the morning they found that von Doring had retired. He had received news of a French column under Maroix advancing on Kamina from the east, and he wished all his forces to be kept for the defence of that place. Among the 200 Germans, military and civilian, concentrated at Kamina there was a good deal of dissension, however, and von Doring, although well supplied with munitions, ultimately abandoned his intention of prolonged resistance. On the night of the 24th he wrecked the wireless installation, and on the 25th sent to ask for terms. Being told that only unconditional surrender would be accepted, he submitted and yielded the whole colony. On the 27th Bryant marched into Kamina from the south, and Maroix from the east. By previous arrangement they met at exactly 8.00 a.m. In the town itself 206 Europeans and 800 native troops surrendered; more were added later from other parts.

The column under Maroix, the senior military officer in Dahomey, had concentrated at Chetti, about 40 miles north-east of Atakpame. Comprising 8 officers and about 350 native soldiers, it had had several minor engagements with German troops on its march to Kamina,

but nowhere had it met the stubborn resistance encountered by Bryant at the Khra.

While the operations in the south were proceeding, British and French columns from the Gold Coast and Ouagadougou invaded the north. On 22 August Captain Marlow occupied Yendi with eight men of the Northern Territories Constabulary. In the belief that he had a large force to deal with, the German commissioner surrendered. The surrender was joyfully greeted by the inhabitants, and the chief expressed the wish to be reunited with the Dagombas living in the Northern Territories under the British flag. A French column of some 630 men advancing from Ouagadougou covered 310 miles in 20 days over difficult country at the height of the rainy season. The local commander had taken measures to defend Sansanné Mango; but on the orders of the Governor, who was then still determined to hold Kamina for as long as possible, 400 German troops retreated before the French. The day after the retreat began 180 of them deserted. The remainder, arriving at Atakpame at the end of the month, became prisoners of war by virtue of von Doring's surrender.

Many natives had been armed by the Germans as potential guerrillas; but, once organized resistance had ceased, they gave no trouble to the allies. In a few weeks, indeed, the economic life of the country was proceeding as though it had suffered no interruption. There had never been in Togo the organized brutality that occurred in some other German colonies, but the disappearance of German rule was nowhere regretted.

Division and Mandate

By an agreement between the Governor of the Gold Coast and the Lieutenant-Governor of Dahomey, subsequently ratified by their respective home governments, the former German colony was divided between the two allies. For the period of the war it was administered as an occupied country by British and French officials. To the United Kingdom were allotted Lome and the western administrative areas, together with the management of both railways, and to France the remainder. This division gave the greater area to the French, but had the disadvantage for them of having their means of transport to the sea and the port itself in British hands. 'France had the zone of production and Great Britain the means of evacuation.' This division, made on the morrow of the conquest, was not permanent. Negotiations followed, and the Franco-British declaration of 10 July 1919 gave to France Lome and the three railways, reserving

only to Great Britain such portions of the western parts of the colony as had racial affinity with Gold Coast tribes. In particular the Dagombas attained their desire, and the whole of their territory, including Yendi, their ancient capital, returned to British allegiance. This division gave nearly two-thirds of the colony to France, and was recognized by the League of Nations. On 20 July 1922 that body issued 'B' Class Mandates to the two Powers concerned. Since then the British sphere has, subject to the provisions of the mandate, been administered by the Governor of the Gold Coast as an integral part of that colony. In point of fact, the frontier between British Togo and French Togo was not finally settled until 1929, in accordance with powers granted by the League to modify it in minor details. It is not necessary to pursue the history of the British sphere farther.

The French sphere was under purely military control until February 1915. The Governor-General of French West Africa then set up a local administration at Anecho, but a presidential decree of 4 September 1916 removed the administration from the Governor-General's control and established a Commissioner of the Republic subordinate only to the Minister of the Colonies. The French capital was transferred to Lome in 1920, and from 1922 the territory has been governed under the provisions of the mandate. The administration is described elsewhere, but generally it may be said that it has followed closely the model of French West African colonies. Unlike British Togo, it has been administered as a separate entity, though in close liaison with French West Africa and under the general supervision of the Governor-General.

The Treaty of Versailles provided that in the late German colonies the Mandatory Power should be at liberty to sell the private property of German subjects. By the end of 1925 the bulk of the Germans' possessions in French Togo had been sold, bringing in some 25,000,000 francs. For three German plantations, covering in all about 40 square miles, no direct purchasers could be found, and they were taken over by the Government. Eventually one at Agou Togo was used as an agricultural station, while the two others were leased to private exploiters.

At first German ships were excluded from Lome and German nationals not allowed to trade in Togo, but, with the Franco-German trade agreement of 5 August 1926 and by the admission of Germany to membership of the League of Nations in the same year, her subjects became entitled to the same treatment as the subjects of the Mandatory Power. By 1938 Germany was doing a substantial trade with her former colony.

Politically there has been nothing outstanding since the mandate was issued to France. In the early years of French rule some unrest was manifested in the far north round Sansanné Mango, which had never been thoroughly pacified by the Germans; but this was over by 1929.

In the Cabrai country in the north-east the density of population was 150 to the square mile, with the result that the soil became impoverished, and disease was rife. On the pacification becoming complete, the Government used all means in its power to encourage the migration of these people to sparsely populated areas in the provinces of Atakpame and Sokode. Well-laid-out villages were built and seeds and food provided for the new arrivals. Between 1925 and 1929, 4,500 people were induced to move. With the extension of the railway northward, the process continued; and it is estimated that by 1936 a total of 15,000 persons had been evacuated from the north.

8. DISTRIBUTION OF POPULATION AND INLAND TOWNS

DISTRIBUTION OF POPULATION

Methods of Taking the Census. The French in Togo, like most other mandatories elsewhere, began their administration with an excess of optimism. This showed itself, among other ways, in their presentation of the population figures. The 1922 Report said:

‘No census by names was effected until 1922, and the enumeration of the population has been worked out according to the information furnished by the village and family chiefs. In 1922 the administrators were invited to proceed regularly with censuses by names in the regions visited by them in the course of their tours. These operations are necessarily lengthy; it is to be hoped that they will be completed by the end of the year 1923.’

That hope was not fulfilled, and the 1923 Report spoke of these censuses by names as being ‘far from completed’. The figures were therefore stated to be ‘approximate for more than half the total’. The 1924 Report recorded the enumeration of the inhabitants of four provinces, together forming some 40 per cent. of the estimated total for the whole territory. It also described the precise methods employed:

‘Each village chief is notified in advance, and, at the appointed day, musters the inhabitants on the village square in the shade of the trees.

Families are grouped separately and are presented by their chief. Discussions frequently arise about obviously incorrect statements, and the respondent must then be closely questioned to induce him to state the exact composition of his family. The natives generally feel, in fact, loath to provide this information, either out of a natural indifference or out of premeditation, in order to avoid the payment of the head tax. It is easy to imagine the slowness with which the census advances under such conditions.'

The whole of Togo was declared to have been covered by the census by 1929, but the completeness and accuracy of the figures were by no means above suspicion. The Annual Reports admitted as much, and gave as reasons for it the movements of individuals and families from one canton to another and the reluctance of the natives to co-operate with the French officials. The totals for each province fluctuated from year to year, but it is interesting to note from Table V

TABLE V

Native Population in 1921 and in 1930

Lome	.	.	.	(1921)	99,204	(1930)	86,015
Anecho	.	.	.	(1921)	112,020	(1930)	117,202
Klouto	.	.	.	(1921)	42,982	(1930)	41,596
Atakpame	.	.	.	(1922)	72,000	(1930)	76,395
Sokode	.	.	.	(1921)	266,428	(1930)	275,679*
Mango	.	.	.	(1922)	129,862	(1930)	128,693*

* In 1925, 11,374 Konkombas were transferred from Mango to Sokode.

that the figures for most provinces in 1930 were much the same as the chiefs' estimates of 1921 and 1922.

The Reports made no comment on the figures from 1931 to 1935 inclusive, and those for 1936 and subsequent years were computed on the new administrative divisions, which makes close comparison impossible. The 1937 Report claimed that an increase of population was due partly to more accurate enumeration and partly to the return from the Gold Coast of former emigrants.

Growth and Density. The last official German census of Togo returned the population as 1,031,715 natives and 125 whites. The 1922 figures for French Togo were 762,208 natives and 245 whites; in 1928 they were 747,000 and 448 respectively; in 1932, 749,419 and 646; and in 1938, 780,170 and 529.

These last give a density of 35.48 persons per square mile, greater than that for French West Africa and for any part of the Federation other than the District of Dakar. There is a small region in the

north-east of the Territory which has fewer than 8 persons per square mile, but, otherwise, the population is fairly evenly distributed, the greatest concentrations being in the coastal belt.

Natives. There is no very large tribe in Togo, the principal ones being the Ewe, the Akposso, the Koto-Koli, and the Losso.

Whites. The official returns of non-native peoples have varied

TABLE VI
Total Population in 1938

<i>Province</i>	<i>Men</i>	<i>Women</i>	<i>Children</i>	<i>Total</i>
<i>(a) Europeans</i>				
Lome	143	91	65	299
Anecho	14	12	6	32
Atakpame	23	12	14	49
Klouto	20	13	6	39
Sokode	23	7	6	36
Mango	11	4	..	15
	234	139	97	470
<i>(b) Syrians</i>				
Lome	16	14	10	40
Anecho . . . .	..	1	2	3
Atakpame	4	2	4	10
Palime . . . .	..	..	..	..
Sokode	1	1	4	6
Mango . . . .	..	..	..	..
	21	18	20	59
<i>(c) Natives</i>				
Lome	26,994	31,499	41,881	100,374
Anecho	40,843	40,921	64,609	146,373
Atakpame	26,832	26,240	33,056	86,128
Palime	11,876	12,515	18,644	43,035
Sokode	79,867	81,372	120,337	281,576
Mango	33,705	32,663	56,316	122,684
	220,117	225,210	334,843	780,170

considerably in form, and there has not always been a clear distinction made between Frenchmen, Syrians (Lebanese), foreigners, and French native citizens. The composition of the 1938 total is shown in Table VI. Most of the Europeans and Syrians were resident in the town of Lome.

INLAND TOWNS

ATAKPAME ($7^{\circ} 32'$; $1^{\circ} 09'$ E.). Altitude, 1,079 feet. Population, *c.* 4,500. Provincial headquarters. Hospital, maternity home, and dispensary. Meteorological station. Regional School. Protestant and Roman Catholic missions. Prison. Garage. Railway workshops. Agricultural experimental station. Weekly market.

Atakpame is on the side of a spur of the Togo mountains. It is an administrative centre and a focus of routes. There are also three cotton ginneries.

Communications. Atakpame is 106 miles by rail from Lome and 65 miles from Blita. By intercolonial road it is 114 miles from Lome, 116 miles from Sokode, and 245 miles from Sansanné Mango. A colonial road runs west-south-west and then south-west to Palime (68 miles). There are several minor roads and tracks, including one that goes north-east into Dahomey.

PALIME ($6^{\circ} 54'$; $0^{\circ} 38'$ E.). Altitude, 751 feet. Custom-house. Hospital, maternity home, and dispensary. Meteorological station. Regional School. Protestant and Roman Catholic missions. Garage. Railway workshops. Agricultural experimental station. Market twice a week.

Palime is 5 miles from Klouto, and it is the nearest railway station to it. It is an important market town, especially for cotton, and there are at least ten ginneries.

It is the terminus of Route 2 from Lome (74 miles). Colonial roads run south-east to Lome (88 miles), north-west to Klouto (5 miles), and north-east to Atakpame (68 miles). There is also a minor road running south-west into British Togo.

SOKODE ($8^{\circ} 58'$; $1^{\circ} 09'$ E.). Altitude, 1,345 feet. Population, 2,870. Provincial headquarters. Hospital, maternity home, and dispensary. Meteorological station. Emergency landing-ground. Technical School. Roman Catholic mission. Prison. Garage. Agricultural experimental station. Market every six days.

The chief town of the centre of the territory, Sokode stands at the southern end of the two routes through the Atakora highlands. It carries on a trade in kapok, for which there are three ginneries.

The hospital specializes in anti-malarial treatment.

By intercolonial road Sokode is 116 miles from Atakpame, 230 miles from Lome, and 129 miles from Sansanné Mango. A colonial

road runs north-eastwards to Bafilo (31 miles) and Sansanné Mango (129 miles). A minor road leads south-eastwards to the Mono valley and thence to Bassila in Dahomey.

9. ADMINISTRATION

German Administration

Subject to the Imperial Government at Berlin, the Governor enjoyed full military and political authority. His judicial functions were delegated in European cases to a judge (*Bezirksrichter*) and in native cases to District Political Officers (*Bezirksamt mannen*). He was assisted by a Secretary, an Inspector of Customs, and a Council. This last was composed of seven Europeans and had purely consultative functions.

District Administration. By 1913 the colony had been divided into eight districts, each under a Political Officer. His jurisdiction was unlimited, although sentences involving a fine of over 300 marks or over three months' imprisonment were subject to confirmation by the Governor. In up-country districts, however, he was entrusted with the power to proclaim martial law, under which he could, sitting with two assessors, impose the death sentence and have it carried out without recourse to the Governor. He was vested with disciplinary powers to chastise natives in employment or working on contract, and this power was the foundation on which many charges of maltreatment were built. The control of funds allocated to his district was entirely in his hands. Sub-districts were administered by junior political officers, who enjoyed such powers as their superiors might delegate to them.

Chiefs. Chiefs were recognized only so far as they could be of use to the Government, but those that were so recognized had considerable powers. On the executive side they were responsible for the collection of taxes (receiving for themselves 5 per cent. of the amount collected), village sanitation, road-cleaning, and generally assisting the Political Officers. This is so in French colonies at present; but the Germans, unlike the French, permitted and regulated chiefs' courts. These had jurisdiction over all natives resident in their area, with the exception of persons directly employed by Government; but natives of position, such as teachers and mercantile clerks, had the right to claim trial by the District Officer. A chief's court had unlimited civil jurisdiction, but criminal jurisdiction only for

minor offences for which a penalty of 100 marks (£5) might be inflicted. An appeal lay to the higher chief's court, and ultimately, or at times alternatively, to the District Officer.

Details of other services are noted in the following pages.

The Mandate and the High Commissioner

A decree of 4 September 1916 set up a Commissioner of the Republic for Togo under the direct control of the Ministry of the Colonies, but by a decree of 21 August 1917 he was placed under the supervision of the Governor-General of French West Africa. At first it appeared that eastern Togo would pass under the sovereignty of France, and so naturally would continue, either as a separate colony or as part of Dahomey, to be a member of the Federation; but when the Treaty of Versailles made it clear that it would ultimately be subject to a mandate, it was thought well to detach it. By a decree of 23 March 1921, therefore, the Commissioner was made the 'depository of the powers of the Republic', a phrase used to describe the officer administering the government of any territory subject only to the control of the Minister of the Colonies. To maintain liaison with the Federation and to assist the discussion of matters of common interest, the same decree gave the Commissioner a seat, which he still holds, on the Governor-General's Council.

After the issue of the mandate on 20 July 1922, Togo's complete independence of any other West African authority continued till the need for economy brought it to an end. The decree of 23 November 1934 made the Lieutenant-Governor of Dahomey *ex officio* Commissioner of the Republic for Togo. In this capacity he was subject only to the control of Paris, and was represented at Lome by a senior administrator to whom he delegated such powers as were necessary for the detailed administration. Togo also lost six of its own heads of departments, whose duties were added to those of the corresponding officers in Dahomey. These departments were Customs, Posts and Telegraphs, Agriculture, Health, Education, and Finance; and the suppression of these posts alone resulted in a net annual saving to the territory of 482,000 francs. Before the outbreak of the present war, however, all these posts had been re-created, and Togo was again a completely separate unit of administration. By the decree of 19 September 1936 the Governor-General became Commissioner of the Republic for Togo, being represented at Lome by a senior administrator with increased powers. Although by the decree of 20 July 1937 the Governor-General became 'High

Commissioner of the Republic for Togo' and the Administrator 'Commissioner of the Republic', the constitution of the Territory was not changed.

The High Commissioner has his small secretariat for Togo at Dakar, which is not formally part of the secretariat of the Federation, but he does little of the ordinary work of administration. This is carried on by the Commissioner, who has the right to correspond direct with Paris on matters of routine. He ranks as a governor, and, like other governors, is appointed by decree. He gives his orders to the heads of his own departments, legislation is promulgated in his name, and he draws up his own budget. This, after being passed by his own Executive Council, goes to the Minister for approval without being considered by the Governor-General in Council at Dakar.

Togo, being a very small unit, can call on the services of the technical experts of the Federal Government, and, in case of need, officers serving in French West Africa can be seconded for service to the Territory. In each case the expense is debited to Togo funds.

Staff. On 1 January 1938 the European staff numbered 129, including 19 administrators. In 1934, the last year for which figures are available, there was a subordinate native staff of 787.

Councils

Not being a colony, Togo sends no representative to the Supreme Council of the French Colonial Empire.

Executive Council. The Executive Council (*Conseil d'Administration*) is composed of the Commissioner of the Republic as president, the Chief Financial Officer, one magistrate and two civil servants appointed by the High Commissioner, four notables, two French citizens, and two natives not citizens.

These last four are appointed by the High Commissioner for two years, but can be reappointed. Unlike similar councils in the French colonies, there is no standing committee. Should the High Commissioner be in the Territory, he presides. From 1920 to 1931 the council met on 243 occasions.

Economic and Financial Council. The Economic and Financial Council, originally created by an order of 4 November 1924, now rests on an Order of 16 August 1937. It is composed of the members of the executive council, the other heads of departments, and the provincial commissioners; the president, vice-president, and treasurer

of the Chamber of Commerce; one member of each province elected by its Council of Notables; one member elected by each of the Native Provident Societies; and one European and one native member of the Commune of Lome.

Elected members hold office for three years and may be re-elected. This Council meets once a year, and there is a standing committee, which can meet at any time to study financial and economic questions for report to the Council. It consists of members residing within easy reach of Lome.

The Commissioner is bound to consult the Economic and Financial Council before imposing new taxation, raising new loans, or starting new public works, but he is in no way bound to take its advice. It must meet once a year, and in practice its sittings, which are open to the public, are held at the same time as the budget session of the Executive Council. The Commissioner usually takes this opportunity of reviewing the past year and explaining any new projects or policies. Being a purely advisory body, its resolutions do not bind the Government in any way, but it affords a useful channel for disseminating information widely, and for testing public feeling towards the Government's policy. No parallel body exists in any of the colonies of the Federation.

Territorial Divisions

There were originally six provinces, but during the years of economic depression the number was cut down to three: the Northern, the Central, and the Southern. By 1 January 1939 the provinces had been restored to their original numbers and titles (Fig. 56). Two of them are divided into districts, as shown below.

<i>Provinces</i>	<i>Headquarters</i>	<i>Area in square miles</i>	<i>District headquarters</i>
Anecho	Anecho	989	..
Atakpame	Atakpame	946	..
Klouto	Klouto	1,063	..
Lome	Lome	2,618	Tsevie
Mango	Sansanné Mango	4,877	..
Sokode	Sokode	11,480	Bassari, Lama

In each province there exists a Council of Notables. Its members are not nominated, but elected for a period of three years.

Communes. Lome is a mixed commune and Anecho is a native commune.

Chamber of Commerce. The Chamber of Commerce of Togo,

which sits at Lome, has for its area the whole of the Territory. Its functions and powers are the same as those of the chambers in

the colonies. It was instituted in 1921, and its composition, which now rests on an order of 1 June 1938, is as follows: five French citizens; three Europeans of a nationality other than French; one native of a country governed by France under an 'A' Mandate (in practice a Syrian); and one native of Togo. Membership lasts for two years, and there is no bar to re-election.

Courts of Law

The native inhabitants of the Territory are not French subjects, but since 1923 they have been able to acquire French citizenship. Very few of them have taken advantage of the opportunity. The great majority comes into the category of *administrés français* or *ressortissants*, corresponding to that of subjects in the Federation proper.

The Court of Assize, the Tribunal of First Instance, and the Colonial Court of Appeal all sit at Lome.

Native Organization

The usual system of chiefs obtains. Its sole modification is that a village has a greater voice in the selection of its own chief.

Three candidates are put forward,

one of whom the provincial commissioner must appoint. Any infringement of this rule must be approved by the Commissioner.

There are no provincial chiefs.

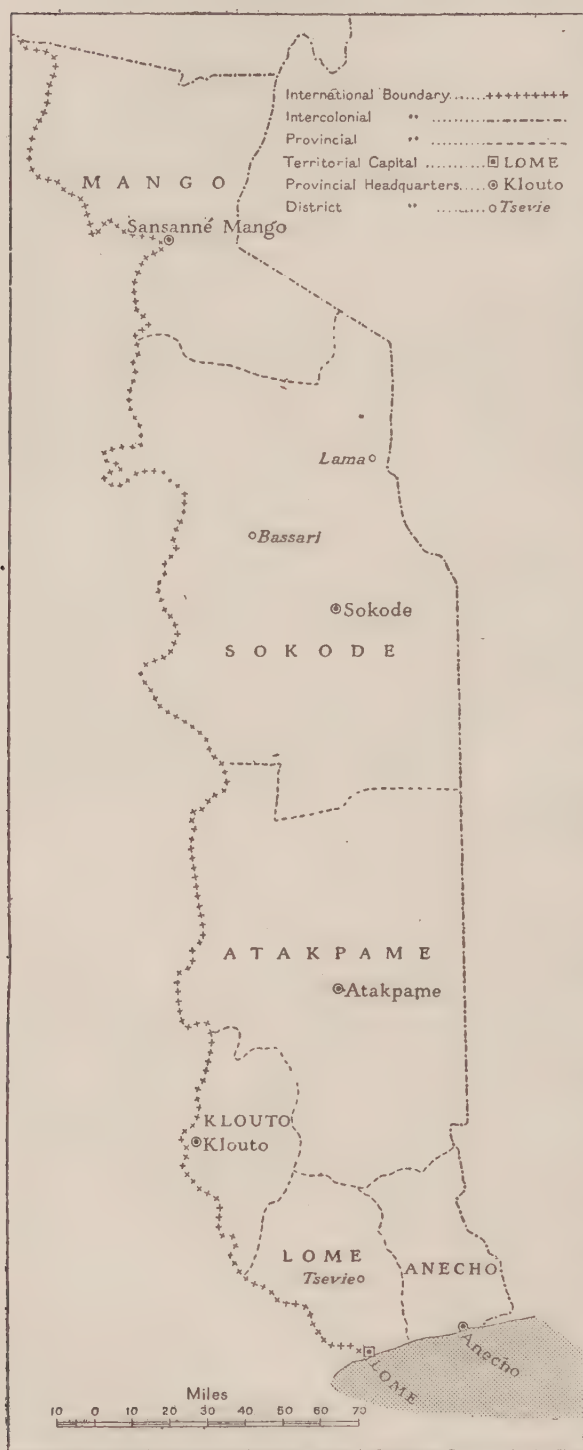


FIG. 56. *Togo: Administrative Divisions*

Land Tenure

German Lands. The Germans granted various concessions, and the change from their rule to that of the French was not effected without difficulty. Titles registered in favour of Germans were recognized, but not their owners. Estates, whether rural or urban, held by Germans were put up for auction, with the proviso that they should not pass into ex-enemy hands. Some for which no bids were made were taken over by the Government; and in one case, an estate near Porto Ségouro, 830 acres out of a total of 1,270 acres were handed back to their original native owners in 1936.

Native Tenure. As in other parts of West Africa, land tenure is almost entirely communal, the community being the family, the clan, or the tribe.

By a decree of 11 August 1920 'vacant' land was declared to be the property of the State. This attracted the unfavourable attention of the Permanent Mandates Commission, and another decree was substituted. This was that of 13 March 1926 by which property in 'vacant' land is laid in the Territory of Togo.

The same decree divided all land into five classes: (i) land already in use for public purposes; (ii) land already held by individuals under a regular title; (iii) land over which natives have rights of user in accordance with their own customary law for cultivation, pasturage, hunting, and other necessary purposes; (iv) land which has already been the subject of formal alienation under the German system; and (v) 'vacant' land (*terre vacante et sans maître*). Classes (iv) and (v) can be disposed of by administrative order. If this is done for land in class (iii), full provision must be made for the continuance of native rights or for compensation for their loss.

Concessions and Registration. No figures are published for concessions, but it is known that these are few in number and are confined to urban building plots. Immatriculation was introduced by a decree of 23 December 1922. This provided that German titles should be recognized as valid and could be transferred to the French register. Up to 31 December 1938, 1,442 titles had been granted, covering some 5,400 acres. Most of this is in towns. Extremely little land has been registered under the system of Confirmation of Native Land Rights.

The office of Conservator of Public Lands, who is the registrar for all the above, was instituted by an order of 28 February 1923.

Labour

Hitherto there has been no lack of labour. In the cocoa season some hundreds of workers, especially from the north, cross the border into British Togo or the Gold Coast. They are attracted by the higher rates of pay; but with the spread of ground-nut cultivation their number is diminishing.

No figures are available for the number of man-days worked under the forced labour system or for labourers in private employment.

Agriculture and Forestry

German Administration. Unlike the Cameroons, Togo was never the scene of the activities of large chartered companies. In 1913 there were only three agricultural concessions, none of them very profitable. On the other hand, every assistance was given to the native farmer. In 1910 there were 15 European agricultural officers, 5 assistant officers, and a number of native subordinate instructors. In the same year the Gold Coast, three times the size of Togo, had only six Europeans on its agricultural staff. An agricultural school was started at Nouatja, at which pupils received a three years' course of instruction. These pupils were meant to return home and inspire their neighbours to follow better methods; but this plan failed, and in 1912 Nouatja was turned into an experimental station.

Present Organization. In the early years of the mandate there was a separate Department of Agriculture. In 1932, however, it was absorbed into that of Dahomey, not to be reconstituted until 23 September 1938. The Territory is now divided into four districts: Southern, Central, Sokode, and Mango, with respective headquarters at Lome, Atakpame, Sokode, and Sansanné Mango. For cotton there is a separate section which covers the whole country.

There is a staff of 9 Europeans and 58 natives, and there are experimental stations at Agou Togo, Aguévé, Atakpame, Bassari, Lome, Nouatja, Palime, Sokode, and Tové.

Native Provident Societies. There is a Native Provident Society in each district as well as each province. In 1938 there were 9 Societies with a total membership of 191,500. An Agricultural Loan Bank was established in 1935.

Produce Inspection. Palm products, coconuts, copra, cotton, coffee, maize, tapioca, and ground-nuts may not be exported without previous inspection. This is carried out by inspectors appointed by the Chamber of Commerce.

Forestry. By an order of 24 December 1938 the Department of Forestry was separated from that of Agriculture. Its head, the Contrôleur des Eaux et Forêts, has his office at Sokode.

Veterinary Services. On 21 October 1938 animal health received its own organization under an officer (*Lieutenant Vétérinaire*) stationed at Sansanné Mango. He has two European assistants and two laboratories, one at Sansanné Mango and the other at Lome.

Public Works and Transport

After an eclipse of some years, during which it was merged in that of Dahomey, an order of 23 February 1938 reconstituted the Department of Public Works and Transport under its own director with headquarters at Lome.

For public works, apart from railways and harbours, there are two territorial sections, North and South, with headquarters at Sokode and Lome respectively. The department is responsible for public buildings, airfields, roads, automobile services, inland navigation, and public industrial undertakings. Surveys and mining are also under its control.

On the transport side the department is responsible for the railway and the port of Lome, and for the construction of new works incidental thereto. For this purpose the director has the advice of a council composed of officials and of private citizens. He is bound to consult it on the railway and harbours budget, changes in the tariffs, and various other matters.

Mining. Mining falls under the care of Public Works, and the mining regulations of French West Africa have been applied. A little iron has been worked for home use by natives of Banyéli in Sokode; a few prospecting licences have been issued to Europeans; and the Compagnie Minière du Togo was formed in 1938 with the general object of mining. So far, however, there has been no organized mining activity.

Education

Education before 1914. The first school in Togo was opened in 1850 by the English Wesleyan Mission. After the German occupation the Roman Catholics and the Lutheran North German Mission of Bremen entered the field. It was not until 1891 that the Government first established a school, and, throughout the period of German rule,

education, more especially on its literary side, was almost entirely in the hands of the missions.

In 1911 the position as regards elementary education was as follows:

	<i>Schools</i>	<i>European teachers</i>	<i>Native teachers</i>	<i>Pupils</i>
Government	2	2	8	337
Roman Catholic	166	23	200	7,087
Lutheran	141	7	176	5,414

There were only a very few Wesleyan schools surviving. There were 5 higher schools with 181 pupils, of which only 1 was managed by Government; and 4 technical schools, 1 Roman Catholic, were training 214 pupils. Altogether there were 13,742 pupils, of whom 2,279 were girls, receiving education of one kind or another.

The medium of instruction was at first the vernacular. Later, under pressure from the Government, German was introduced, and grants to schools increased with the proportion of pupils who passed a satisfactory examination in German. In the higher schools, both mission and government alike, all instruction was given in German. The technical schools trained boys for carpentry, smiths' work, boot-making, tailoring, printing and bookbinding; while girls received domestic training. Generally speaking, no fees were payable, except that at some of the higher schools boys paid 50 marks (£2 10s.) a year; but, at the conclusion of their course, pupils at the government technical schools were bound, if required, to enter the government service for two or three years.

The French System. In 1915 the French opened a school at Zébé, which was later transferred to Anecho, and by 1921 there were 13 government schools with 1,242 pupils and 19 mission schools with 4,063 pupils.

Education was first organized by an order of 4 September 1922, and is now governed by an order of 18 January 1935. The official system follows that of the Federation.

Private education rests upon an order of the 27 October 1933. Owing to the terms of the mandate, which require that Togo shall be open to missions of all states that are members of the League, it is not so strictly controlled by the Government as in French West Africa. Private teachers do not need French qualifications and need not use French as the sole medium of instruction; but only those schools which teach French are eligible for a government grant, which is based upon the teachers' salaries.

The following table shows the number of primary schools and pupils in 1938:

	<i>Schools</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
Government	53	4,253	649	4,902
Roman Catholic	35	3,623	917	4,540
Evangelical Mission	15	992	253	1,245
Wesleyan	3	154	16	170

It can be seen that mission schools equalled government schools in number, but exceeded them in their total of pupils. Even so, only 8·5 per cent. of the money voted for education was devoted to mission schools, while in 1939–1940 the Gold Coast spent 55 per cent. of its total education vote in grants to these.

Higher education is given by the government Higher Primary School at Lome. This was closed from 1935 to 1938, and its pupils sent to the one at Porto Novo. In 1938 it had 32 pupils undergoing a three-year literary course for clerical or teaching careers. Its pupils are also eligible to compete for places in the higher education institutes of the Federation, such as the School of Medicine at Dakar.

There is a government Technical School at Sokode, where pupils are prepared for taking posts in the Department of Public Works and Transport, and the Roman Catholics have a school at Lome, where iron-work, carpentry, and printing are taught. This school is assisted by the Government not only by money grants but by the privilege of importing its technical apparatus duty-free.

Pupils who hope to join the agricultural service of the colony can receive a three years' course at the Agricultural School at Porto Novo, which is under the direction of the Department of Agriculture of Dahomey.

During the years of economic depression education in Togo was under the supervision of the Dahomey Education Department, but in 1937 a separate Director of Education was again appointed. The budget for 1938 provided, in addition to the Director, for an educational staff of 10 Europeans and 103 Africans.

Health

The Germans had no special medical branch. Doctors in the service were independent of each other, and each was responsible for his own work direct to the Governor. There were four hospitals, at Anecho, Misahöhe (Klouto), Palime, and Lome, each in charge of a resident medical officer. The hospital at Lome was barely finished at the outbreak of war in 1914. In addition to these establishments,

a mobile dispensary in charge of a doctor had its headquarters at Sokode, and in some districts there were resident medical officers. A special campaign was directed against sleeping-sickness.

In 1938 the European medical staff amounted to 16, of whom 13 were qualified medical officers. The native staff comprised 13 doctors of the auxiliary medical staff, trained at Dakar, and 310 subordinate personnel, including nurses of both sexes, midwives, dispensers, and trained laboratory staff.

At the end of 1937 there was 1 central hospital at Lome (with accommodation for a limited number of Europeans), 9 minor hospitals, 32 medical posts, and 6 maternity centres. In 1938 these treated 54 European and 6,004 native in-patients and 989 European and 685,071 native out-patients.

Sleeping-sickness is dealt with by special travelling parties, which were strengthened in the latter part of 1938. Under an order of 25 January 1939 leprosy is treated in special villages with their own chiefs. It is estimated that there are approximately 14,000 lepers in the Territory.

The various missions do a certain amount of medical work, and infant welfare in Lome is directed by a voluntary organization staffed by the local branch of the Croix-Rouge Française. This works in close co-operation with the Government, from which in 1938 it received grants amounting to 30,000 francs.

Anti-malarial and other sanitary measures are dealt with in each province by a committee consisting of the provincial commissioner and the medical officer, with an unofficial European and an unofficial native member. In Lome this committee is strengthened by the addition of the Director of Health Services and the Commissioner of Police, and carries out its work through the Municipal Council.

10. PORTS

LOME (6° 08'; 1° 20' E.). Population (1938), 14,106, including 274 Europeans. Territorial capital. Mixed Commune. Provincial headquarters. Custom-house. Law courts. Hospital and maternity home. Police headquarters. Meteorological station. Emergency landing-ground. Wireless station. Higher Primary School. Protestant and Roman Catholic missions. Private schools. Bank of West Africa. Power station. Hotels. Garages. Railway workshops. Cinemas. Bacteriological laboratory.



126. *Lome: a corner of the market*



127. *Anecho*



128. *Lome: the main wharf*



129. *Lome: cranes on the wharf*

Until the Germans came, Lome was a small Ewe village. To-day it may claim to be a well-planned town with boulevards, squares, and roads. The Roman Catholic cathedral has two fine spires, which are visible for 15 miles out to sea.

It is, of course, a roadstead rather than a port, but it does a fair trade, exporting palm products and cocoa and importing manufactured goods.

Description of Port

Ships anchor off shore, well outside the surf. There are two wharfs, of which only one (Plate 128) is in use. This is the more westerly of the two. It is 295 feet long and 62 feet wide, and the depth at its head is 6 fathoms.

Equipment. There are four 3-ton cranes (Plate 129) and two 2-ton. The capacity of the port is said to be 600 tons of goods daily.

Communications

Rail. Lome is the terminus of all three railway routes, being 27 miles from Anecho, 74 miles from Palime, and 171 miles from Blita.

Road. Lome is also a road centre. By intercolonial road it is 114 miles from Atakpame, 230 miles from Sokode, 359 miles from Sansanné Mango, and 45 miles from Grand Popo (Dahomey). By colonial road it is 88 miles from Palime and 93 miles from Klouto. There is also a track that runs westwards into the Gold Coast.

Wireless. The wireless station is a little to the west of the town.

Cable. Cables are landed west of the main wharf. They lead to Cotonou and to Douala.

Shipping. Boats of the Chargeurs Réunis and Fraissinet lines call regularly, and the port is also served by the America West African, Elder Dempster, Fabre, Holland West Afrika, and Woermann lines.

ANECHO (6° 15'; 1° 39' E.). Population, 4,343, including 25 Europeans. Native Commune. Provincial headquarters. Custom-house. Dispensary and maternity home. Protestant and Roman Catholic missions. Prison. Daily market.

Anecho (Petit Popo), the former capital of Togo, is on the southern shore of the coastal lagoon, but its factories straggle for almost a mile along the spit of land that separates this lagoon from the sea. This spit is about 300 yards wide. Anchorage is in 8 fathoms 1 mile off shore, and landing is by surf-boat.

The trade of the town is very small.

Communications

Rail. Anecho is the terminus of Route 1 from Lome (27 miles).

Road. The intercolonial road runs west to Lome (28 miles) and east to Grand Popo (17 miles). A colonial road runs north to Akope (35 miles) and Agbelouve (53 miles).

11. MINERALS

No important export of minerals has as yet taken place. Of the minerals potentially capable of development the most noteworthy is chromite (Vol. I, p. 295). Others are gold, found in small quantities in the bed of the upper Mono, mica, and lead. Bauxite and diamonds have also been noted, and at one time the lateritic and haematitic iron ores near Bassari were extensively worked for smelting in native furnaces.

12. AGRICULTURE

AFTER 1914 the large plantations of the German colonists were deprived of European supervision, and agriculture suffered a regress. In recent years, however, the French have done much to stimulate production.

Most of the territory is in the manioc zone, but the northern part is in the millet.

Food Crops

Ground-nuts. Two species of ground-nut are grown for local consumption. These are the Bambara ground-nut (*Voandzeia subterranea*) and the Geocarpa (*Kerstingiella geocarpa*). The former, found also in French Sudan and in the drier parts of French Guinea, is not a true ground-nut, as its oil content is no more than 5 per cent.; but its seeds are useful as pulse or as flour. The seeds of the Geocarpa have a similar taste to that of butter beans, and they are very nutritious.

Peas and Beans. The Lima bean (*Phaseolus lunatus*) and the pigeon-pea (*Cajanus cajan*) are respectively the commonest species. The former is usually planted between other crops. The pods are eaten like French beans, the leaves cooked to make a sort of spinach, and the seeds boiled or crushed. The pigeon-pea is a shrub of about 6 feet high, believed to have originated in India. It is sometimes used to protect plantations of young coconut palms. The fruit of

the African locust bean (*Parkia filicoidea*) yields an almost dry yellow pulp. This pulp is a form of meal, which is sometimes pressed and sold in blocks.

Borassus Palm. The *Borassus* palm (*Borassus aethiopum*), common in many parts, is another tree with several uses. Its sap is rich in sugar and can be made into palm wine, and the fruit pulp can be eaten either raw or cooked.

Minor Crops. Hungry rice (*Digitaria exilis*) is grown in the north-west, and cashew nuts, the fruit of a small tree (*Anacardium occidentale*), are found in the south. Manioc, maize, and yams are grown chiefly in the south, yams in the centre, and millet in the north.

Other Useful Crops

Tobacco. Both 'Turkish' (*Nicotiana rustica*) and American tobacco (*N. tabacum*) are grown, but the latter is by far the more important. It is smoked or chewed, and local consumption accounts for the whole crop. The nicotine is used as an insecticide for sheep-dips or against the tsetse-fly. The leaves of the tobacco plant are usually picked at the end of the wet season, but, where there is enough rain, a second picking may be made five or six months later.

Oil Palms. The oil palm grows about as far north as latitude 8° and is particularly common in the province of Atakpame. In 1938 the Native Provident Societies distributed 20,000 young trees to their members. All these trees came from the research station at Pobe (Dahomey). In the same year at least 22 mechanical crushers were in use for the production of palm oil.

Coffee. Most of the coffee is *Coffea arabica* and is grown in the hill country round Palime. The export figures (p. 530) show that production is not unimportant, and the distribution in 1938 of 1,800,000 plants should make this still greater when the plants have fully matured.

Cotton. Cotton is grown in the centre, often being interplanted with yams. Most of it is *Gossypium barbadense*. There are ginneries at Nouatja, Atakpame, Lome, Palime, and Sokode.

Tapioca. Although manioc is produced mainly for subsistence, some of it is converted into tapioca for export. Small factories for this purpose exist at Anféou and Atouéta (7 miles north-east of Anecho).

Timber

In 1907 the Germans began a plantation near the junction of the Haho and the Joto, and almost 500,000 teak seedlings were planted.

South of Bassari another area was afforested with 400,000 seedlings of mahogany and 200,000 of teak. A third plantation is near Kalangachi. All these have been maintained and extended by the French, and oil palms and silk-cotton trees have also been planted. In years to come this policy should yield a valuable return in timber.

Livestock

Because of the tsetse-fly there are few cattle. Some are kept in the north, but there are probably not more than 14,000 of them. Sheep and goats, mostly found near the coast, number some 200,000 and there are many pigs. Chickens are common everywhere.

Experimental Stations

There are experimental stations at Palime, Tové, Nouatja, Atakpame, Sokode, Bassari, Agou Togo, Aguévé (on the railway 6 miles north of Lome), and Lome. At each of these stations work is done on local products. There is also a stud farm at Alavagno, 33 miles south-west of Atakpame.

13. COMMERCE AND FINANCE

COMMERCE

The Balance of Trade. Table VII shows that trade to a total value of 141,191,500 francs (£966,206) was done in 1938, and also that the imports commonly exceed the exports in value but not in weight.

TABLE VII. *Total Trade, 1936-1938*

	1936		1937		1938	
	Weight in tons	Value in francs	Weight in tons	Value in francs	Weight in tons	Value in francs
Imports . . .	25,624	47,119,500	23,501	78,701,000	20,436	73,750,000
Exports . . .	55,121	44,025,000	50,776	75,554,000	52,695	66,529,500
Transit trade . . .	..	..	298	238,500	139	670,000
Re-exports . . .	876	832,000	1,034	1,655,000	558	1,242,000
TOTALS . . .	81,621	91,976,500	75,609	156,148,500	73,828	142,191,500

Firms. The principal trading firms are the Compagnie Française de l'Afrique Occidentale, the Deutsche Togo Gesellschaft, John Holt & Co., G. B. Ollivant & Co., the Société Commerciale de l'Ouest Africain, the Société Générale du Golfe de Guinée, and the United Africa Co.

Imports. The most valuable imports are cotton cloth, leaf tobacco, cigars and cigarettes, petroleum and paraffin, and medicines, but the most important imports by weight are cement and salt. Manufactured goods, both textile and metal, play their customary large part, as also do food and drink for Europeans. Oil fuel, coal, bicycles, and paper are all represented. Further details are given in Appendix A.

France naturally provides a considerable proportion of the imports to her mandated territory, but Tables VIII and IX indicate that the United Kingdom is the principal importer of goods of all kinds. The gradual increase in the imports from France and from French Colonies is officially attributed to the successive devaluations of the franc. The chief supplier of petrol, petroleum, motor vehicles, and flour is the United States of America.

TABLE VIII. *Origins of Imports, 1936-1938*

<i>Countries of origin</i>	1936		1937		1938	
	<i>Quantity in tons</i>	<i>Value in francs</i>	<i>Quantity in tons</i>	<i>Value in francs</i>	<i>Quantity in tons</i>	<i>Value in francs</i>
France	4,563	4,088,000	4,035	6,921,500	4,469	12,293,500
French Colonies	275	267,500	332	614,500	1,568	2,963,000
Other countries	20,786	42,764,000	19,134	71,165,000	14,399	58,493,500
TOTALS	25,624	47,119,500	23,501	78,701,000	20,436	73,750,000

TABLE IX. *Chief Suppliers of Imports, 1936-1938*

(Value in francs)

	1936	1937	1938
France	4,088,000	6,921,500	12,293,500
French Colonies	267,500	614,500	2,963,000
Belgium	1,213,000	2,547,500	1,918,500
British Colonies	6,247,000	8,162,000	7,420,500
Germany	3,071,500	5,950,000	3,569,000
Holland	2,404,000	5,717,500	4,004,000
Japan	5,526,000	11,025,500	8,344,500
United Kingdom	15,915,000	22,531,000	16,823,000
U.S.A.	4,408,500	6,623,500	7,840,000
Other countries	3,979,000	8,608,000	8,574,000
TOTALS	47,119,500	78,701,000	73,750,000

Exports. In 1938, 52,965 tons of goods to the value of 66,529,500 francs were exported, the principal items being cocoa, palm kernels, maize, cotton, copra, shelled ground-nuts, and dried fish. All these,

of course, are the products of local agriculture or fisheries. Further details of the exports are given in Appendix B.

TABLE X. *Destinations of Exports, 1936-1938*

<i>Destinations</i>	1936		1937		1938	
	<i>Quantity in tons</i>	<i>Value in francs</i>	<i>Quantity in tons</i>	<i>Value in francs</i>	<i>Quantity in tons</i>	<i>Value in francs</i>
France	38,616	28,145,000	32,211	50,282,000	36,722	44,181,000
French Colonies	60	1,120,500	116	124,000	1,125	1,164,000
Other countries	16,445	14,759,500	18,449	24,848,000	14,848	21,184,500
TOTALS	55,121	44,025,000	50,776	75,554,000	52,695	66,529,500

From Tables X and XI it can be seen that in 1938 some two-thirds of the exports went to France. These included the whole of the copra, the whole of the coffee, the whole of the rice, 19,231 tons of maize, 5,459 tons of cocoa, 4,887 tons of palm kernels, and 1,892 tons of ground-nuts. The high position taken by British Colonies in 1938 is mainly due to the purchase by the Gold Coast of 1,241 tons of maize, of 1,171 tons of manioc flour, and of 1,138 tons of cocoa. The large quantity of maize available for export was the result

TABLE XI. *Chief Customers for Exports, 1936-1938*

(Value in francs)

	1936	1937	1938
France	28,145,000	50,582,000	44,181,000
French Colonies	45,500	124,000	1,164,000
Belgium	206,000	356,000	589,500
British Colonies	56,500	..	8,135,500
Denmark	230,000	2,628,500	124,000
Germany	5,983,500	6,012,000	3,341,500
Holland	2,974,000	997,000	1,982,500
United Kingdom	2,280,000	4,606,500	5,677,500
U.S.A.	2,984,000	6,346,000	639,500
Other countries	1,120,500	3,902,000	694,500
TOTALS	44,025,000	75,554,000	66,529,500

of the unusually heavy rains of that year. The exports to the United Kingdom were far less than the imports; nevertheless, they included the whole of the cotton-seed as well as considerable quantities of ginned cotton. Germany purchased 1,807 tons of palm kernels, Holland 1,068 tons, and Czechoslovakia 550 tons.

Re-exports and Transit Trade. No single re-export is of importance, but the transit trade has some features of interest.

The boundary between British Togo and French Togo was so drawn as to cut off an important area for cocoa-growing from its previous access to the sea via Palime to Lome. For a number of years this made no practical difference, as there was no fiscal obstacle to export by such a route. In 1936, however, the British authorities imposed a duty on cocoa of £1. 3s. 4d. per ton and other duties on imported goods. This meant that goods for British Togo coming through Lome had to pay two sets of duties, and it is not surprising that traffic on the railway from Lome to Palime shrank considerably. The cocoa began to be exported through the Gold Coast, travelling by lorry to Accra. It was hoped to counteract this tendency by the improvement of railway facilities and by better equipment at Lome. The 1938 cocoa season, however, came too late for any results to be recorded in the Annual Report. In that year 151 tons of merchandise crossed the border beyond Palime as against 190 tons in 1937.

Shipping. Table XII shows the numbers and registered tonnage of ships entering and leaving ports of Togo in 1936, 1937, and 1938. It is clear from the figures that French and British ships together accounted for over 80 per cent. of the total in each year.

TABLE XII. *Shipping, 1936-1938*

Nationality	1936		1937		1938	
	Nos.	Registered tonnage	Nos.	Registered tonnage	Nos.	Registered tonnage
French . . .	174	729,739	177	748,633	156	695,277
American . . .	7	23,247	12	40,592	13	45,201
Belgian . . .	..	..	1	1,473	..	..
British . . .	135	338,148	143	370,682	128	310,011
Danish . . .	7	13,093	..	..	4	4,830
Dutch . . .	17	39,150	12	24,130	22	47,950
German . . .	7	16,501	9	20,791	15	39,158
Greek . . .	..	..	3	8,858	..	..
Italian . . .	18	60,720	12	36,809	11	36,972
Norwegian . . .	8	15,174	17	31,266	9	23,979
Swedish . . .	5	7,549	..	..	..	..
TOTALS . . .	378	1,243,321	386	1,283,234	358	1,203,378

FINANCE

The budget for the year ending 31 May 1938 balanced at 40,996,700 francs (£251,513), and the estimates for the following year envisaged

a total of 50,534,000 francs. The figures for 1938 were published in the customary form as follows:

<i>Revenue</i>						<i>Estimates Francs</i>	<i>Receipts Francs</i>
I. Ordinary Revenue							
Direct taxes	.	.	.	.	.	7,844,000	7,933,000
Customs and excise	.	.	.	.	.	21,002,000	22,870,000
Posts, telegraphs, &c.	.	.	.	.	.	781,000	1,130,000
Grants and subsidies	.	.	.	.	.	1,669,700	1,750,000
Receipts from previous financial year	.	.	.	.	.	200,000	630,000
II. Extraordinary Revenue							
Sundry receipts	.	.	.	.	.	3,500,000	1,000,000
Exceptional withdrawals from the Reserve Bank	.	.	.	.	.	2,000,000	3,300,000
General funds	.	.	.	.	.	4,000,000	5,444,000
TOTALS	.	.	.	.	.	40,996,700	44,057,000
<i>Expenditure</i>						<i>Estimates Francs</i>	<i>Payments Francs</i>
I. Ordinary Expenditure							
Debt charges	.	.	.	.	.	5,845,500	5,845,000
Salaries of administrative staffs	.	.	.	.	.	7,750,000	7,720,000
Other administrative expenses	.	.	.	.	.	1,463,000	1,450,000
Posts, telegraphs, &c. (salaries and wages)	.	.	.	.	.	2,632,500	2,630,000
Posts, telegraphs, &c. (plant and materials)	.	.	.	.	.	962,500	955,000
Public works	.	.	.	.	.	2,910,000	2,830,000
Social and economic departments (salaries)	.	.	.	.	.	3,866,000	3,850,000
Social and economic departments (other expenditure)	.	.	.	.	.	1,965,000	1,950,000
Sundry disbursements	.	.	.	.	.	4,099,200	3,967,000
Secret funds	.	.	.	.	.	3,000	3,000
II. Extraordinary Expenditure							
Sleeping-sickness units (salaries)	.	.	.	.	.	1,145,000	700,000
Sleeping-sickness units (other expenditure)	.	.	.	.	.	2,355,000	2,000,000
Public works	.	.	.	.	.	2,000,000	1,100,000
General funds	.	.	.	.	.	4,000,000	5,444,000
TOTALS	.	.	.	.	.	40,996,700	40,444,000

It will be observed that the revenue exceeded its estimate by 3,060,300 francs and that the expenditure fell short of its estimate by 552,700 francs, a total surplus of 3,613,000 francs. Fig. 57 summarizes the budget from 1928 to 1938 in diagram form.

Revenue. Many more facts about the revenue of Togo are available than for the colonies of the Federation proper. Unfortunately, the

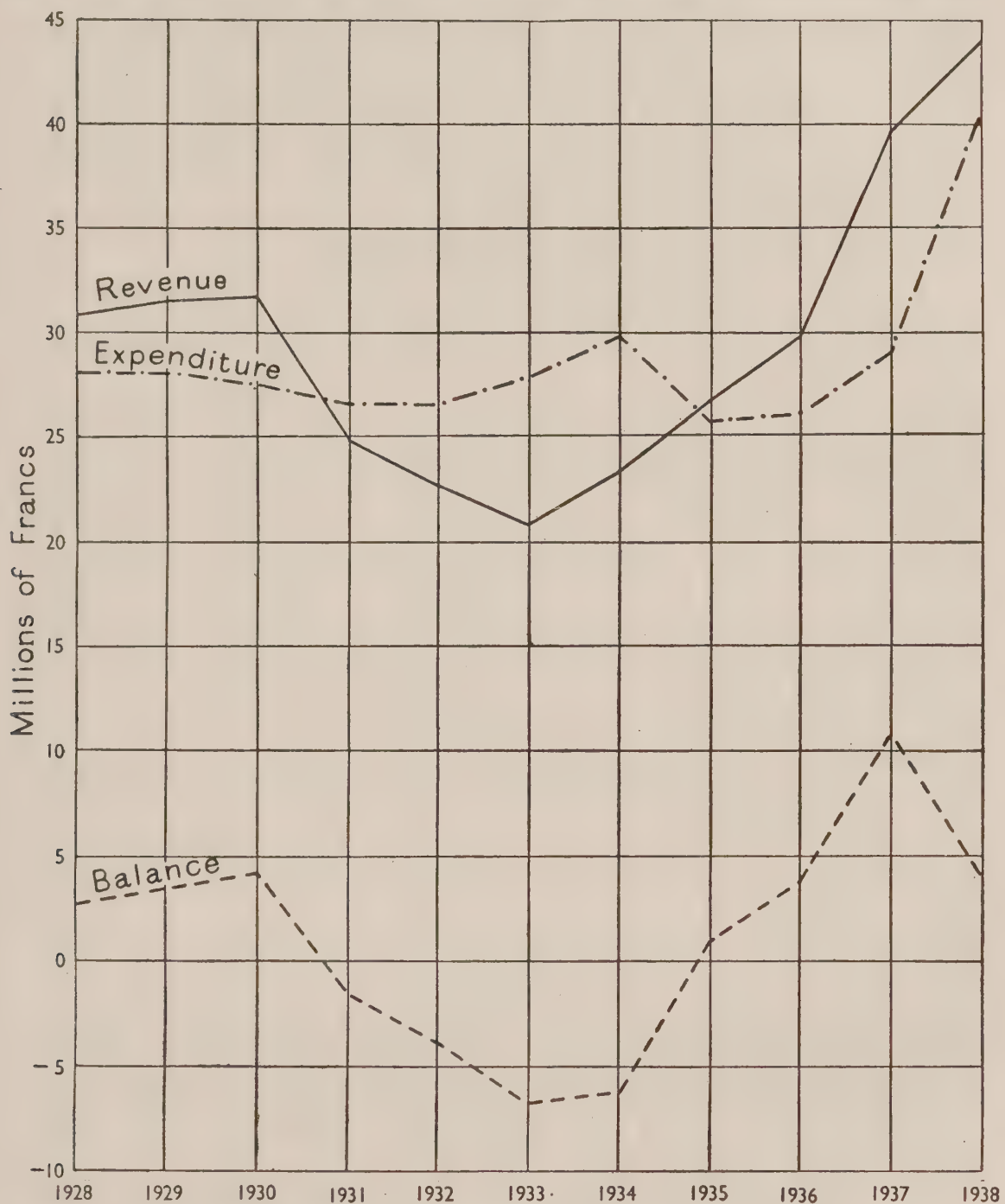


FIG. 57. *Togo: Summary of Budgets, 1928-1938*

figures for 1938 were not published before the outbreak of war, but the Report for that year analysed the 1937 figures in fair detail. The total revenue was estimated at 32,391,000 francs, but was actually 39,741,923 francs 25 centimes. Direct taxes brought in 7,717,224 francs 71 centimes, of which 6,914,435 francs 38 centimes were provided by head tax and income tax; indirect taxes 24,236,700

francs 42 centimes, of which 17,772,221 francs 35 centimes were customs duties; posts, telegraphs, and telephones 532,814 francs 39 centimes; wireless 6,074 francs 82 centimes; grants, subsidies, &c. 6,564,756 francs 36 centimes; and a special grant from France towards medical, educational, and other native services 800,000 francs.

A further analysis of taxation for the years 1935-1937 is given in Table XIII. This is also taken from official sources, but the figures do not agree with those given above.

TABLE XIII. *Taxation, 1935-1937*

	1935	1936	1937
<i>Direct Taxes</i>			
Income tax (Europeans) . . .	107,964	88,859	150,777
Head tax (natives)	2,780,504	2,773,213	6,500,421
Personal tax (floating population) .	15,950	17,020	32,060
Forced labour redemptions . . .	2,233,386	2,285,178	231,177
Land tax	38,860	45,689	47,659
Trade licences	476,345	396,771	465,710
Licences	143,181	111,975	130,150
Gun licences	123,630	96,140	82,893
Tax on vehicles	166,153	46,680	51,675
Tax on through transport . . .	68,618	166,858	383,624
Tax on native medical services . .	1,717,478	1,714,572	..
TOTALS	7,872,069	7,742,955	8,076,146
<i>Indirect Taxes</i>			
Import duties	7,973,588	10,576,472	14,396,652
Export duties	118,498	108,729	2,191,494
Fines, forfeits, sales, &c. . . .	634,971	670,015	720,472
Consumption tax	554,289	263,854	179,165
Tax on business turn-over . . .	1,974,454	3,728,630	5,517,023
Land registration duties . . .	129,630	102,404	142,311
Stamp duties	177,496	214,040	293,498
Estate, forest, and mineral duties	193,706	253,370	511,646
TOTALS	11,756,632	15,917,514	23,952,261

As in many other countries, so in Togo income tax was increased in 1937. The lowest incomes paid between 1 and 4 per cent., and those over 400,000 francs per annum paid 20 per cent. The native head tax was also increased, as was the fee for the redemption of forced labour. The latter increase explains the considerable falling off in redemption money: the natives preferred to work. The denunciation in 1937 of the Niger Convention meant that customs barriers were erected on the Togo frontier and duties paid on goods not coming from French territories.

Expenditure. The latest year for which details of the expenditure were published is also 1937. The total expenditure that year was estimated at 32,391,000 francs, but in the event it was only 29,088,723 francs 83 centimes, giving a credit balance of 10,653,199 francs 42 centimes. No less than 5,302,351 francs were spent on health services and 1,719,290 francs on education. Grants totalling 33,000 francs were made to various scientific institutes in France and 55,356 francs to local social and sporting clubs. The latter included 15,000 francs to the infant welfare organization (Œuvre du Berceau) and 18,526 francs to the Aéro-Club du Togo. Most of the other items of expenditure were in no way remarkable, with the possible exception of a grant of 500 francs (*c.* £3. 5*s.*) towards the erection of a memorial to the late Governor-General Binger.

Loans. At the end of 1934 authorized loans totalled 75,700,000 francs, of which some 65,000,000 francs had been spent on railway construction.

Banking. The Bank of West Africa (Vol. I, p. 349) has a branch at Lome which appears to serve the needs of the whole Territory. On 31 May 1937 the Reserve Bank had assets of 4,362,636 francs, which were expected to increase by 7,000,000 francs during the following year.

Currency. The franc is the only legal tender in Togo. On 28 February 1938 the fiduciary issue was 67,801,370 francs and a year later 112,902,940 francs.

14. COMMUNICATIONS

RAILWAYS

THERE are three railway lines, all of metre gauge and all starting from Lome. Their respective termini are Anecho, Palime, and Blita. For purposes of more detailed description they have been numbered as follows:

1. Lome–Anecho (27 miles; 44 km.).
2. Lome–Palime (74 miles; 119 km.).
3. Lome–Atakpame–Blita (171 miles; 276 km.).

It will be realized, therefore, that the territory is unusually well supplied with rail transport. It also has a greater number of stations in proportion to the length of track than any other part of West Africa. This is partly due to the French policy of concentrating the native population into new villages near the railways.

History

The Germans began work on the line from Lome to Anecho in 1902. The object of this line was to provide easy transport for the palm products of the coastal belt to one or other of the two ports. It was opened on 18 July 1905. The gauge was 75 cm. and the cost was low, being about £2,120 per mile. Although it was built at Government expense, it was handed over to a private company. In 1908 it was converted to metre gauge.

On 16 June 1904 the Reichstag voted 8,000,000 marks (£400,000) for a second line. This was designed to tap the cotton, rubber, and sisal plantations farther inland, and was to run from Lome to Palime. Construction began early in 1904, railhead reached Noépé on 17 August of that year, and the whole line was opened on 27 January 1907. Like the one to Anecho, this line was also handed over to private management. Its economic purpose was fulfilled, and valuable traffic was diverted from Gold Coast ports. To-day two-thirds of the cocoa exported from Lome is grown in British territory.

The third railway was built for more purely administrative reasons, and was intended to strengthen the German grip on the interior. Construction was authorized on 18 May 1908 and began in the September. Railhead reached Dadja on 31 March 1911, but the last section to Atakpame was not opened until 2 May 1913. When the territory was mandated to France, plans were made for an extension to Sokode. These plans were not put into operation until 1929, when a start was made; but the world economic depression caused a stoppage. Blita was made the terminus and service was established to that place on 2 November 1933. Since that date nothing more has been done. Blita is, of course, no substitute for Sokode, and it seems probable that this line will be one of the first to be extended when the present war is over.

Permanent Way, Locomotives, and Rolling-stock

Rails and Sleepers. On all lines built by the Germans rails are 33 feet (10 metres) long and weigh 40 lb. per yard (20 kg. per metre). French rails are also 33 feet long, but weigh 52 lb. per yard (26 kg. per metre). Sleepers are of steel and are spaced at 12 or 13 to each length of rail.

Gradients and Curvature. Gradients only exceed 1:60 between Dadja and Atakpame, and the minimum radius of curvature is 656 feet (200 metres).

Locomotives. The following locomotives were in service in 1939:

<i>Wheel arrangement and type</i>	<i>Makers</i>	<i>Unloaded weight in tons</i>	<i>Number</i>
2-8-2	Haine St. Pierre	42	8
4-6-0	Nasmith and Wilson	32	4
2-8-0	Orenstein and Koppel	29½	2
0-6-0	Haine St. Pierre	29½	4
0-4-0	Haine St. Pierre	15	4
40-h.p. railcar	..	10	1
			—
TOTAL			23

There were also 7 power trolleys.

Carriages and Wagons. In 1939 there were 27 passenger coaches and 420 goods wagons.

Traffic

The following figures give some information about traffic in 1937 and 1938:

	1937	1938
Passengers . . .	1,162,050	1,161,320
Passenger miles . . .	21,231,475	20,867,673
Freight in tons . . .	63,452	73,440
Ton miles . . .	2,436,761	2,409,287
Revenue . . .	£44,947	£39,977

Details of passenger services given below in the Itineraries refer to 1939.

Itineraries

Route I

LOME-ANECHO

There is a daily service of two trains in each direction. The journey time is about 2 hours. Owing to the line's proximity to the sea, the rusting of rails is a considerable nuisance.

<i>Distance from Lome</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	31	LOME	There is a repair shop at Lome. The line runs approximately east-north-east, parallel and close to the shore. Throughout its whole length it is north of the road.
4	2½	33	GRAND BÉ (halt)	
9	5½	..	KAINKOVÉ (halt)	
13	8	..	BAGUIDA	
19	12	32	BAGUIDA AVANT-POSTE	
23	14	..	MESSAPLAKA (halt)	..
30	18½	30	PORTO SÉGOURO	
33	20½	..	KPÉMÉ (halt)	
36	22	36	GOUMKOVÉ (halt)	
44	27	32	ANECHO	..

Route 2

LOME-PALIME

Service is limited to two trains a week in each direction. The journey time is 5 hours.

<i>Distance from Lome</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	31	LOME	Leaving Lome by the north, the line soon curves north-west to run roughly parallel with the frontier of British Togo. This remains its general direction, although it has many curves. As can be seen from the figures for elevation, the line rises fairly steeply and constantly as far as Assahoun. This town has a considerable local importance as a market and as a focus for native tracks, some of which cross into British territory.
16	10	157	SANGUÉRA	
24	15	194	AKÉPÉ	
27	17	236	NOÉPÉ	
33	20½	240	BAGBÉ	
42	25½	338	SADJA	From Assahoun the line drops to Tové, and then rises again. After Togo the line bends more directly north-west to avoid the southern slopes of Mt. Agou. Agou Togo stands at the highest point of the line. From there it drops down to a small valley, emerging from it to reach Palime, where there is a repair shop.
54	33½	581	ASSAHOUN	
68	42	459	TOVÉ	
80	50	482	AMOUSOUKOVÉ	
86	53	..	GLÉKOFÉ	
95	59	..	TOGO	After Togo the line bends more directly north-west to avoid the southern slopes of Mt. Agou. Agou Togo stands at the highest point of the line. From there it drops down to a small valley, emerging from it to reach Palime, where there is a repair shop.
100	62	512	GADJA	
106	66	794	AGOU TOGO	
113	70	614	ABESSIA	
119	74	751	PALIME	

Route 3

LOME-ATAKPAME-BLITA

This line is run in two halves, with a change of train at Atakpame. On both sections there are two trains a week in each direction. The journey time for the first section is 7 hours, for the second 4¼ hours.

<i>Distance from Lome</i>		<i>Elevation in feet</i>	<i>Stations</i>	<i>Itinerary</i>
<i>Km.</i>	<i>Miles</i>			
0	0	31	LOME	Two miles from Lome this line leaves Route 2 and pursues a northward course. At first it is west of the road, and at Togblékové it crosses the Chio (Plate 130). It soon begins to gain height.
10	6	138	AGUÉVÉ	
15	9	69	TOGBLÉKOVÉ	
27	17	266	DAVIÉ	Davié and Tsevie stations are both 4 miles south-south-west of their respective towns.
32	20	338	TSEVIE	
43	27	233	KOLOKOFÉ	..
48	30	230	LILIKOVÉ	At Lilikové there is a small bridge over the Lili.
58	36	374	GANIKOVÉ	..
61	38	430	AGBÉLOUFOÉ	..
68	42	397	GAMÉ	Shortly after Gamé the line crosses the road, only to recross it immediately north of Amakpavé.
75	46½	328	AMAKPAVÉ	..
83	51½	446	GBÉLÉ	
99	61½	505	NOUATJA	Three miles beyond Nouatja the line crosses the road, remaining east of it as far as Anié.
115	71½	614	AGBATITOÉ	
129	80	466	KHRA	At Khra there is a crossing of the little river of the same name. This is the first of the tributaries of the Mono to be encountered. Smaller streams are crossed at Gleï and at Amoutchou before the line ascends steeply to reach Atakpame, where there is a repair shop.
144	89	551	GLEÏ	
151	94	515	AMOUTCHOU	
160	99	610	DADJA	
171	106	1,079	ATAKPAME	Northwards from Atakpame there is less information available. The line drops rapidly after reaching its highest point. Unlike the road, it makes use of the Ana valley, and climbs through rather difficult country to Blita. Here there is a small repair shop.
174	108	1,260	..	
195	121	525	ANIÉ	
224	139	..	AKABA	
276	171	1,066	BLITA	

ROADS

The road system of the Territory is simple. It consists mainly of the intercolonial road that connects Lome with Ouagadougou and three large colonial loops that afford access respectively to Palime, Klouto, and Akope. These main roads are supplemented by numerous tracks, especially in the south and between Palime and Ho (British Togo).

Intercolonial

The coast road from Lome to the border of Dahomey (30 miles) has already been noticed in Section 3.

The road to the north is sometimes described as the 'spinal cord' of the Territory. It runs close to the railway until north of Atakpame. Starting from Lome, it goes through Tsevie (24 miles), Agbelouve (53 miles), Atakpame (114 miles), and Blita (181 miles) to Sokode (230 miles). From there it bends north-west to Bassari (264 miles), and then more directly north again to Kadjamba (322 miles) and Sansanné Mango (359 miles). The road continues north-north-westwards to Bogou (390 miles) and the border of the Ivory Coast (427 miles), 82 miles from Tenkodogo and 193 miles from Ouagadougou.

Colonial

A colonial road leaves Lome by the north-west and follows roughly the course of the railway to Assahoun (37 miles) and Palime (88 miles). It then climbs the hill to Klouto (93 miles). Another road joins Palime directly to Atakpame (68 miles). The third of these roads goes north from Anecho and then west to Akope (35 miles) and Agbelouve (53 miles).

SIGNALS

Cables

Lome is connected by submarine cable to Cotonou and to Douala (French Cameroons). In 1939 to send a message to France cost 16.10 francs (1s. 10d.) per word.

Telegraphs and Telephones

There are telegraph lines along the railway lines, along the intercolonial road from Blita to Sansanné Mango, and from Lome to Accra. There is a telephone service between Palime, Lome, and Anecho and between Lome and Atakpame.



130. *Railway bridge across the Chio*



131. *A road near Atakpame*

Postal Services

In normal times there is a weekly air mail service between Lome and Dakar. Inside the Territory itself mail is distributed by the railway and by cyclists, while there is a cyclist service that goes three times a week to British Togo.

Wireless

There is a wireless station ($6^{\circ} 07' N.$; $1^{\circ} 20' E.$) at Lome. It has 4 medium wave-lengths and 1 short wave-length, and it gives a public service to ships at a power of 0.5 kilowatts. In 1939 to send a message to France cost 13.25 francs (1s. 6d.) per word.

APPENDIX A

Principal Imports, 1936-1938

		1936		1937		1938	
		Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
Cotton cloth .	tons	734	14,270,000	770	21,939,000	469	15,959,000
Sacks and sack- cloth .	"	757	1,711,000	819	2,612,000	683	2,517,500
Ready-made clothing .	"	36	879,500	48	1,831,500	21	1,062,000
Artificial silk .	"	16	670,000	18	1,271,000	12	800,000
Thread .	"	56	751,000	55	1,216,000	36	1,025,000
Motor cars .	Nos.	33	257,000	37	439,000	47	650,000
Motor lorries .	"	59	508,000	153	1,608,000	110	1,275,000
Bicycles .	"	1,708	617,500	2,842	1,398,000	949	816,000
Other machines and machinery .	tons	99	1,019,000	125	1,430,500	48	1,455,000
Iron and steel bars and sheets .	"	762	960,000	1,149	2,871,500	481	1,347,500
Other metal goods	"	1,664	2,657,000	1,039	3,871,000	523	2,857,500
Dried and salted fish .	"	230	530,000	172	354,000	841	2,126,000
Rice .	"	510	336,500	661	684,000	654	948,500
Sugar .	"	621	657,000	833	1,344,000	549	1,265,000
Wheat flour .	"	378	293,500	342	671,500	304	927,000
Salt .	"	3,856	309,500	2,480	247,500	2,622	315,000
Wine .	gallons	75,109	713,000	74,140	868,500	63,988	855,000
Spirits .	" ¹	4,279	446,000	8,469	1,250,000	8,215	1,588,000
Beer .	"	36,762	542,000	74,944	1,150,000	43,736	889,500
Leaf tobacco .	tons	159	930,000	153	1,578,000	198	3,165,000
Cigars and cigar- ettes .	lb.	20,613	518,000	44,511	1,708,000	72,642	2,908,000
Coal .	tons	4,047	639,000	3,031	674,000	2,995	820,000
Petroleum, fuel oil, and paraffin	"	1,362	1,203,000	1,809	1,953,000	1,795	3,045,000
Petrol .	"	952	932,000	941	1,439,000	757	1,664,000
Lubricating oil .	"	82	119,000	152	276,000	102	314,000
Perfumery .	"	122	825,000	111	1,190,000	57	1,102,000
Medicines .	"	28	598,000	30	529,000	26	2,447,000
Soap ² .	"	147	321,000	181	522,000	166	533,000
Household goods	"	470	1,639,000	442	2,433,000	138	1,199,000
Toys and gew- gaws .	"	105	939,000	61	2,139,000	52	1,907,000

¹ Of pure alcohol.² Other than toilet soap.

APPENDIX B

Principal Exports, 1936-1938

	1936		1937		1938	
	Quantity	Value in francs	Quantity	Value in francs	Quantity	Value in francs
Shelled ground-						
nuts . . . tons	1,372	1,324,000	1,674	2,395,000	1,949	2,773,000
Palm kernels . . "	21,166	11,152,000	12,255	17,225,500	8,514	10,720,500
Copra . . . "	5,577	4,943,000	2,997	5,481,000	2,655	4,262,000
Cotton-seed . . "	2,249	229,000	2,668	878,000	2,856	1,306,000
Cocoa . . . "	10,037	13,979,000	7,901	24,083,000	7,512	19,082,000
Coffee . . . "	160	814,000	399	1,961,000	340	1,798,000
Maize . . . "	7,684	1,327,000	15,730	7,878,000	20,933	10,635,000
Manioc flour . . "	59	30,000	485	369,000	2,258	2,294,000
Tapioca . . . "	459	236,000	195	148,000	305	378,000
Yams . . . "	254	51,000	651	202,500	760	420,000
Ginned cotton . . "	1,491	5,305,000	1,617	7,668,000	1,808	7,348,000
Ginned kapok . . "	226	534,000	228	825,000	267	1,151,000
Dried fish and shrimps . . . "	292	818,000	492	1,175,000	949	2,508,000

APPENDIX I

METEOROLOGICAL TABLES

NOTES

1. *Pressure*. The figures have been reduced to 32° F. and corrected for gravity to latitude 45° N.
2. *Cloud*. A clear sky has less than 2 tenths covered, an overcast one more than 8 tenths.
3. *Rainfall*. A rain-day has 0.004 inch or more of rain in the 24 hours between observations.
4. *Visibility*. 'Poor visibility' (*brouillard*) means a visibility of less than $\frac{3}{8}$ mile (1 km.).
5. *Calm*. A calm connotes a wind strength of less than 3.1 m.p.h. (5 km.p.h.).
6. *Upper Air*. Stations marked * in the list below are equipped to take readings of the upper air.
7. *Authority*. Except those for Togo, all figures are taken from the *Mémento du Service Météorologique* (Dakar, 1943). Rainfall is given for the period from 1931 to 1940 and other statistics for that from 1936 to 1940.

STATIONS

Dahomey (pp. 532-535): Cotonou*, Natitingou, Pobe, Tchaourou*.

French Guinea (pp. 536-539): Beyla, Conakry*, Kouroussa*, Mamou.

French Sudan (pp. 540-543): Araouane, Bamako*, Gao*, Kayes*.

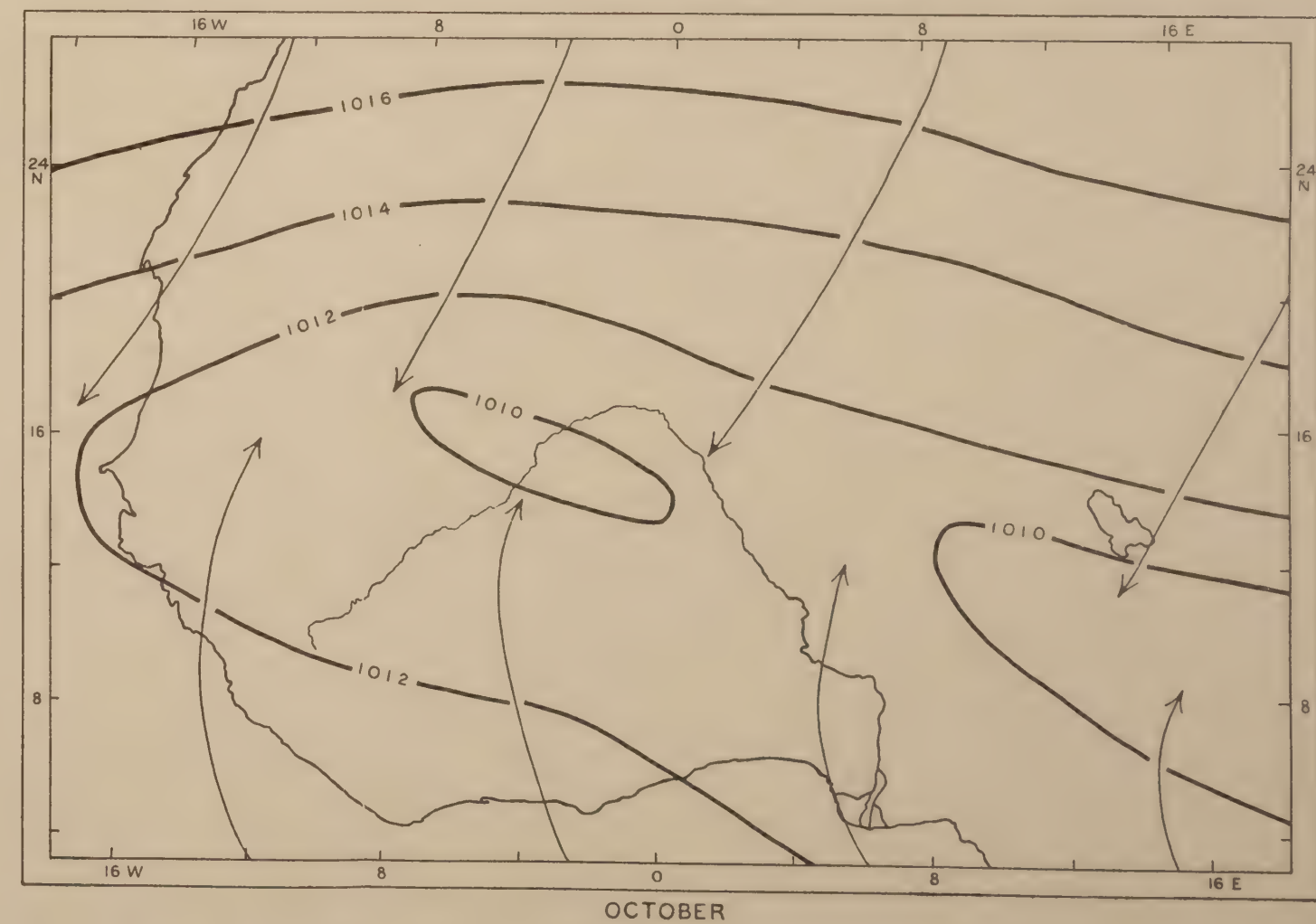
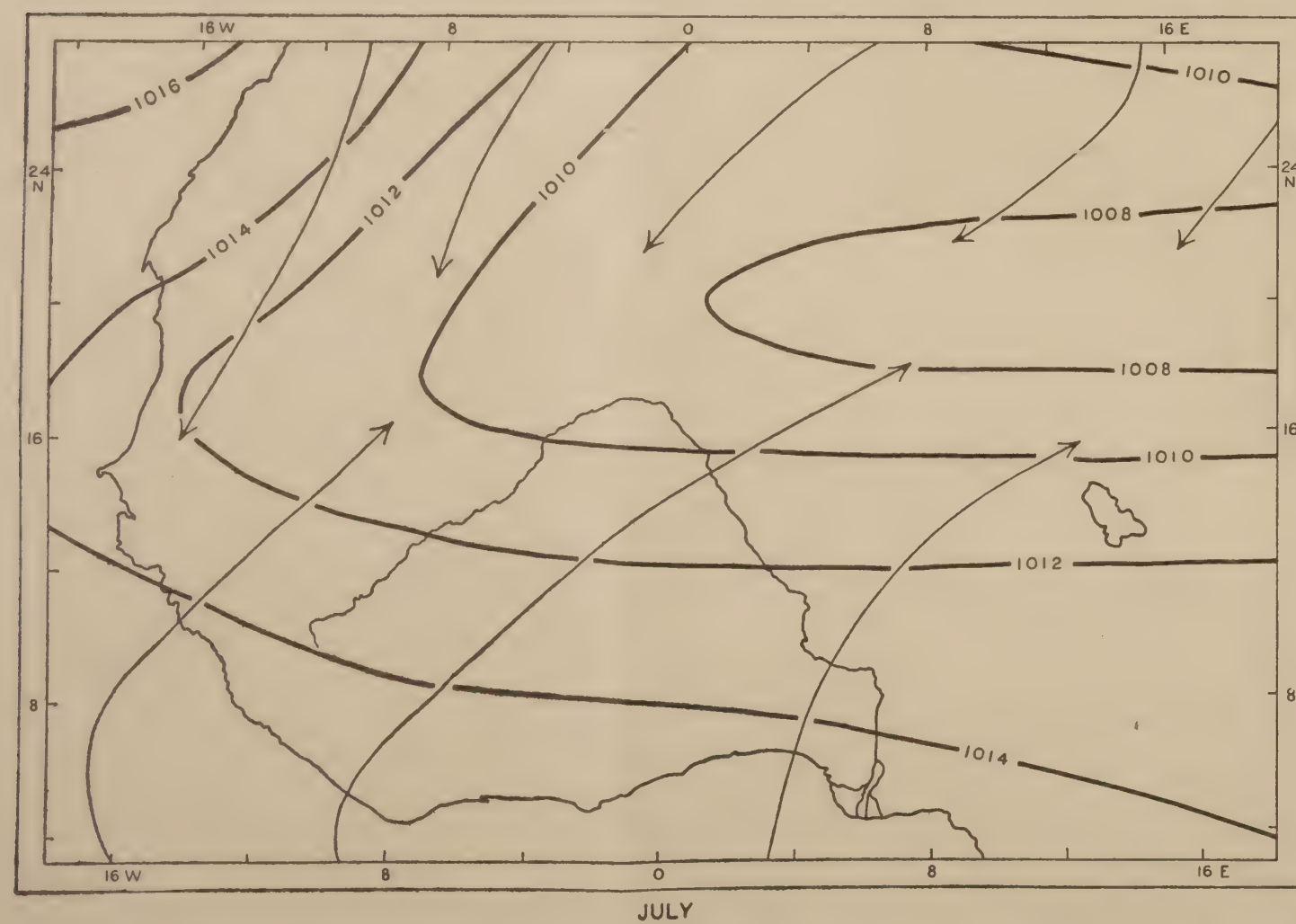
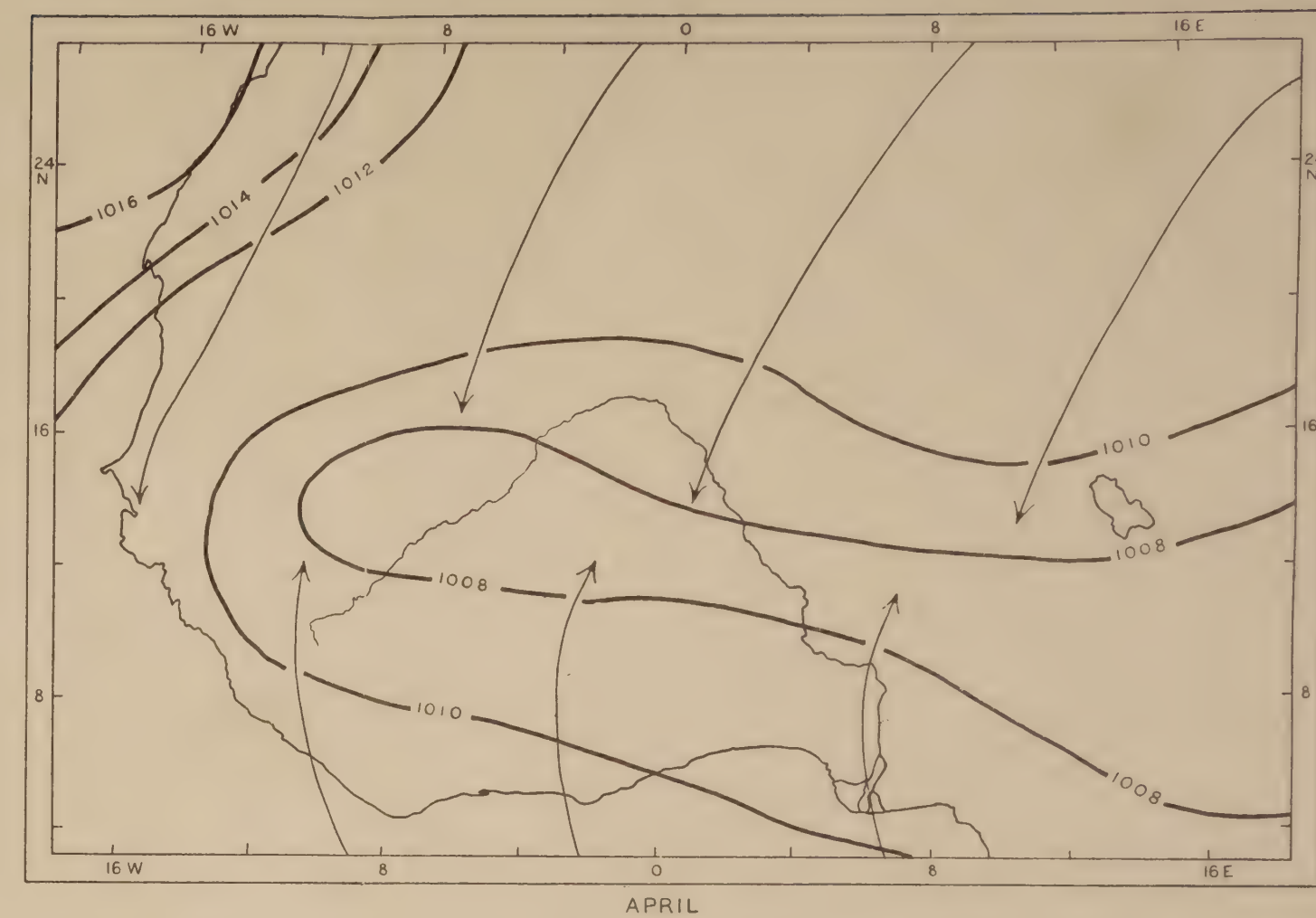
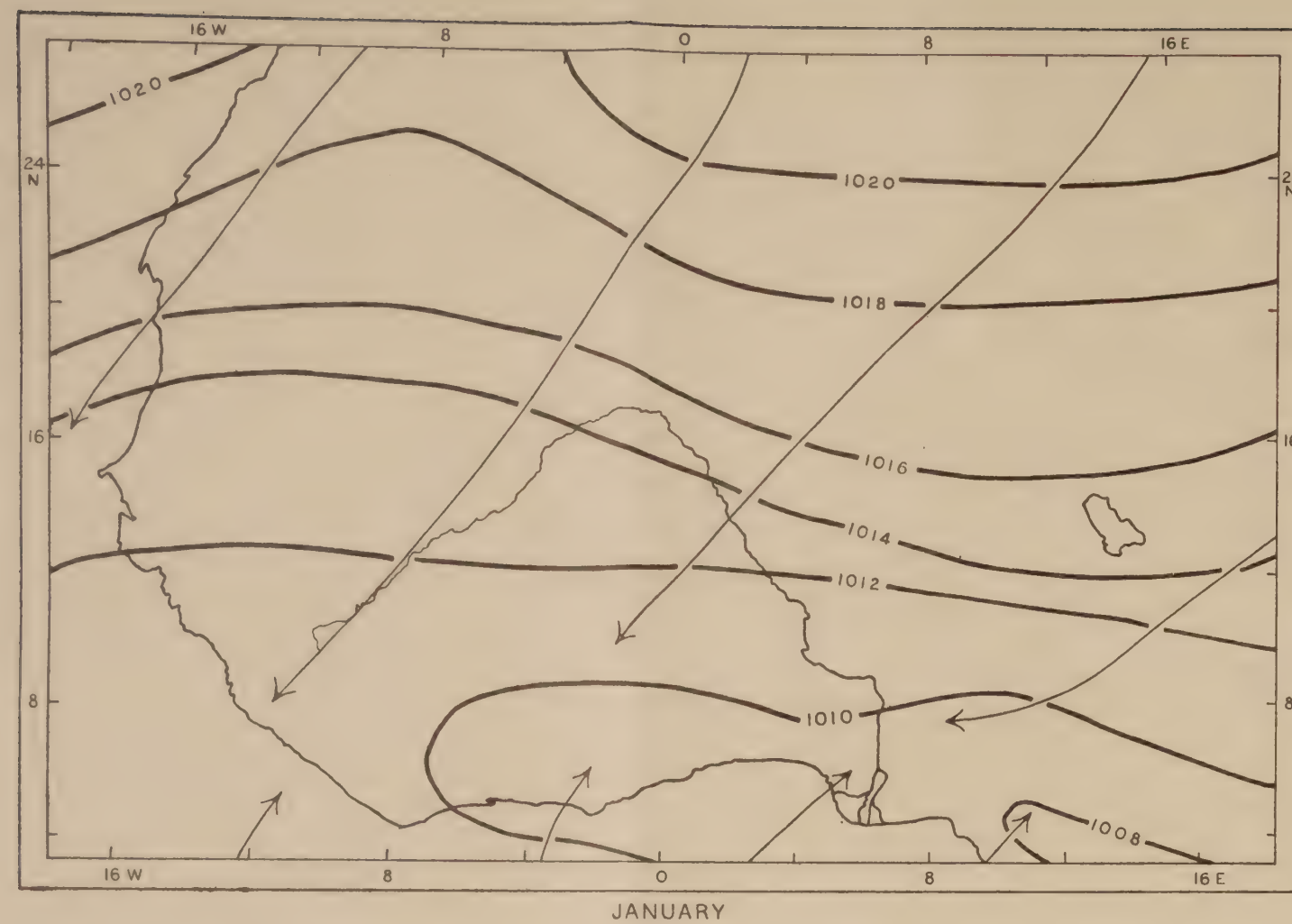
Ivory Coast (pp. 544-549): Abidjan*, Bobo Dioulasso, Bouaké*, Odienné, Ouagadougou*, Tabou*.

Mauritania (pp. 550-551): Atar, Port Etienne*.

Niger (pp. 552-555): Agades, Bilma, Niamey*, Zinder*.

Senegal and Dakar (pp. 556-559): Dakar*, St. Louis*, Tambacounda*, Ziguinchor*.

Togo (p. 560): Atakpame, Lome.



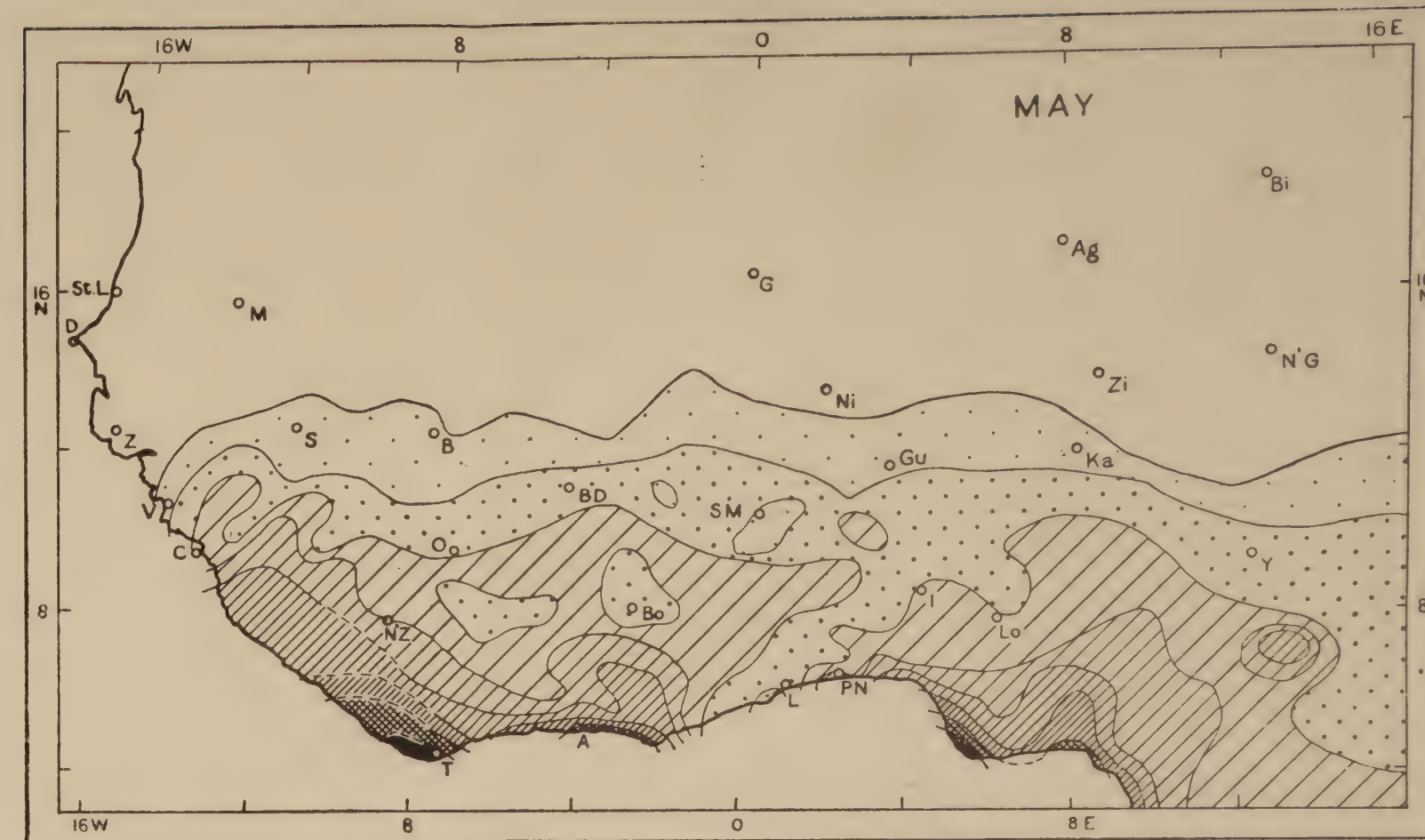
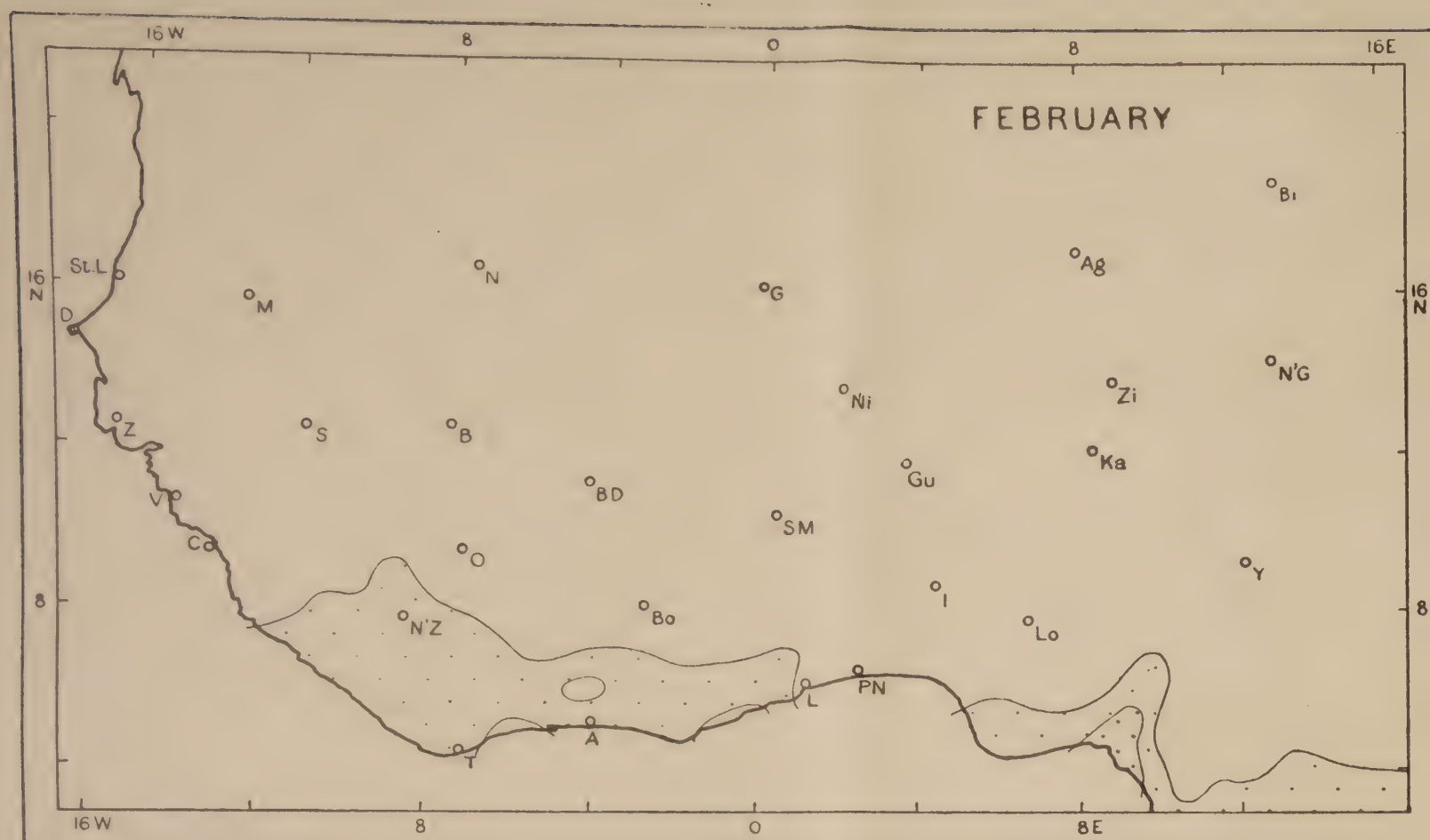
Miles 200 100 0 200 400 600 800 1000 1200 Miles

FIG. 58. *Isobars and Winds of the Federation*

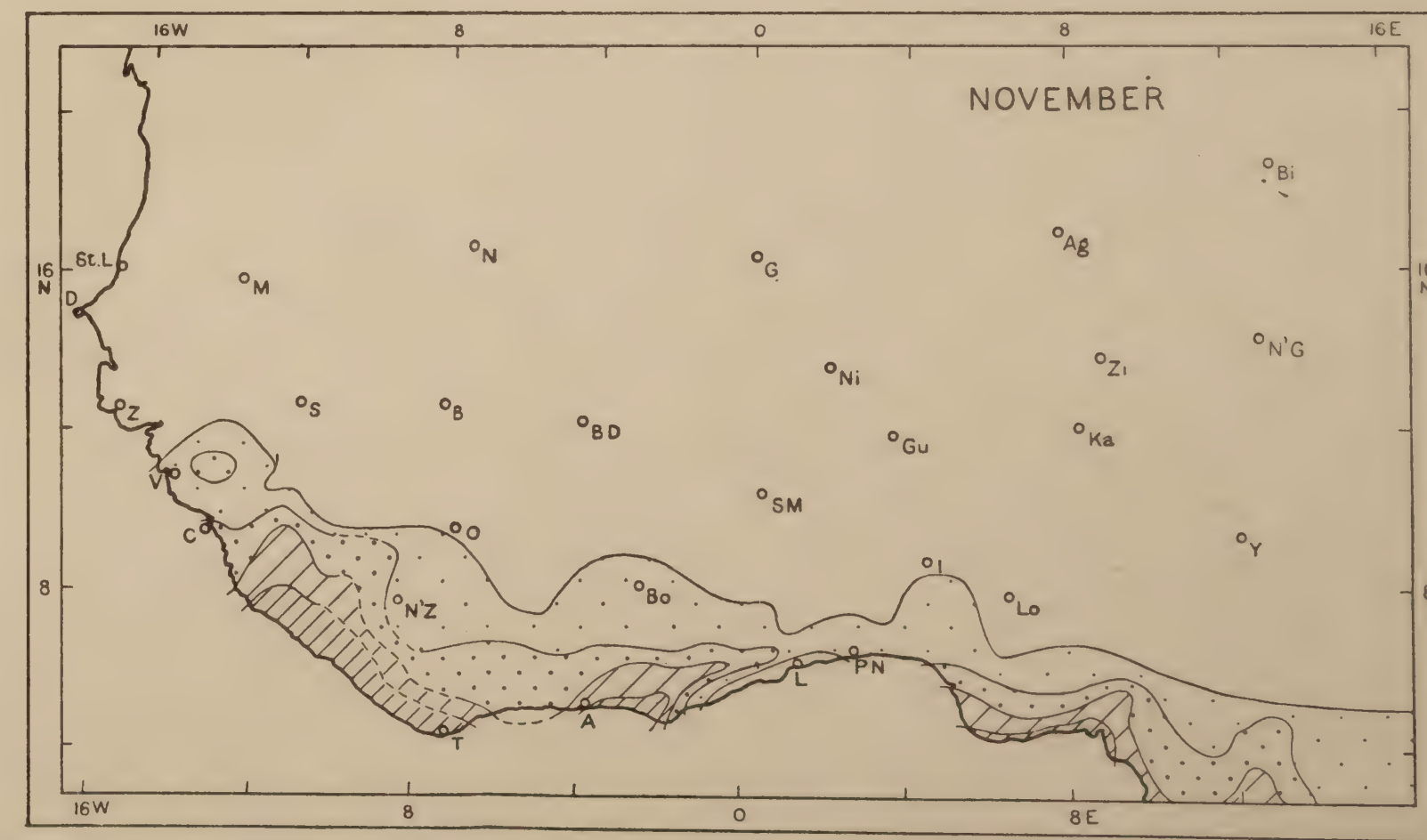
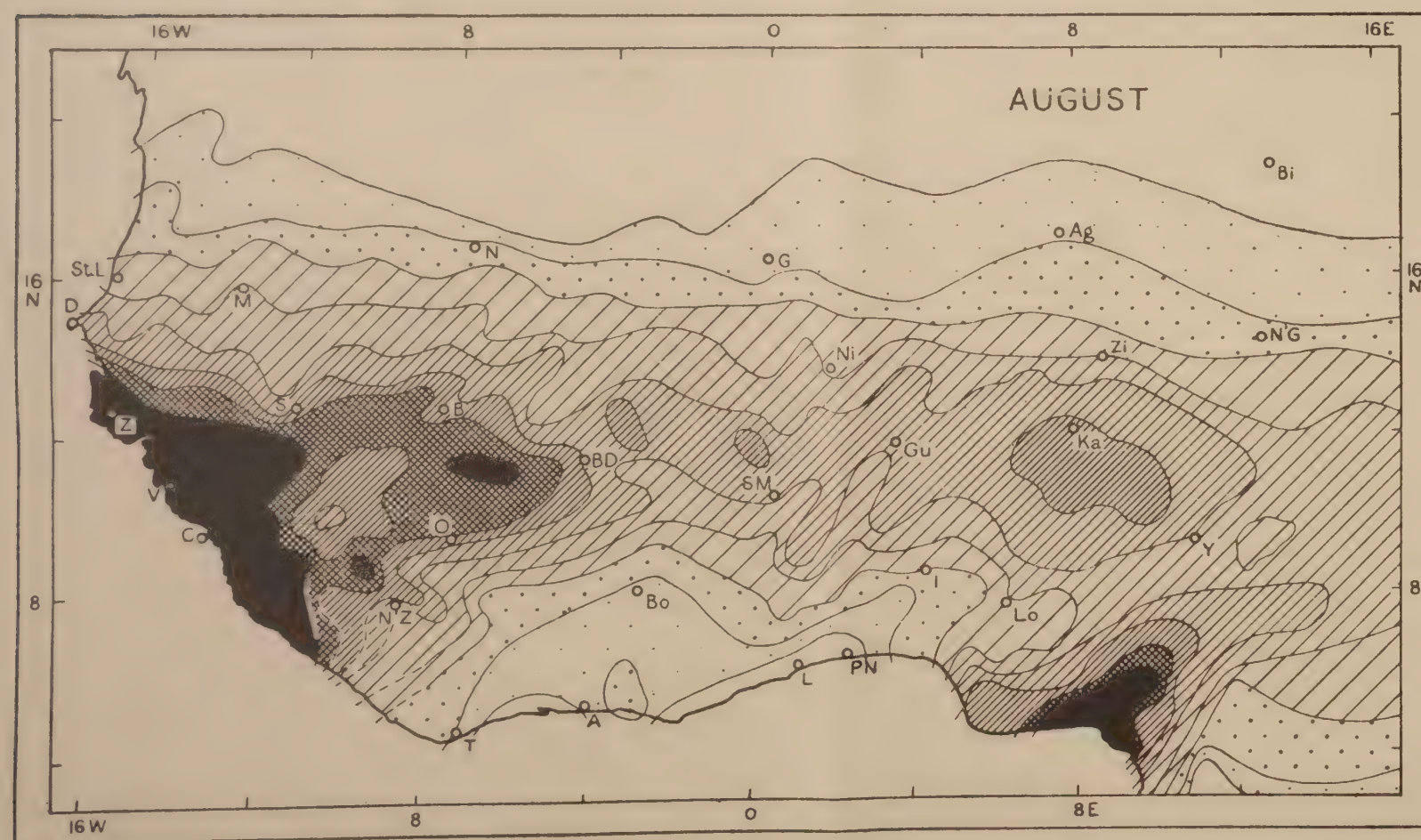
NATTINGOU

Lat. 10° 16' N.; Long. 1° 23' E. Height above M.S.L. 1,522 ft.

Month	Pres- sure	Air temperature at station level				Air relative humidity	Mean cloud amount (Scale 0-10)		Precipitation			Mean No. of days of thunder	Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.								Month				
		Mean of			Absolute max.		8.00 a.m.	6.00 p.m.	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days		Percentage of observations												
		°F.	°F.	°F.									N.	NE.	E.	SE.	S.	SW.	W.	NW.		Calm			
January	mb. 1011	102.2	88.2	69.8	55.1	mb.	15.0	46	44	%	3.4	0.04	0.40	0.1	0.2	12	25	27	3	2	0	3	3	25	January
February	1010	104.0	91.0	71.6	64.6	19.3	15.0	56	52	%	3.8	0.20	0.71	0.5	1.0	8	11	17	4	7	8	9	2	34	February
March	1009	104.0	93.0	74.6	63.0	21.8	19.3	65	54	%	4.4	1.35	1.67	2.9	3.0	2	15	15	3	2	8	10	10	35	March
April	1010	104.0	91.8	76.3	68.0	26.2	21.8	73	62	%	5.9	2.24	1.49	6.6	6.0	1	6	10	7	4	15	17	6	34	April
May	1010	95.8	87.3	73.8	67.8	27.2	26.2	82	75	%	5.9	5.34	3.54	9.9	9.0	0	4	7	5	1	16	13	9	45	May
June	1013	89.6	84.2	71.6	65.2	28.1	27.2	86	79	%	5.8	5.91	2.05	10.8	8.0	0	1	3	7	4	14	10	8	53	June
July	1015	87.0	80.6	70.8	64.1	25.7	28.1	89	85	%	6.2	10.28	4.29	13.6	9.0	1	1	2	3	2	21	12	6	52	July
August	1014	87.8	79.6	69.6	64.1	25.1	25.7	91	87	%	6.5	8.87	3.32	14.2	8.0	1	1	8	5	1	12	5	7	60	August
September	1014	90.6	81.6	69.5	62.0	25.5	25.1	90	88	%	6.8	11.07	3.35	17.8	12.0	0	4	11	4	0	17	5	8	51	September
October	1013	92.4	84.1	70.2	62.8	25.6	25.5	86	84	%	6.2	4.26	1.89	9.6	8.0	0	6	13	5	0	5	3	11	57	October
November	1012	97.8	86.6	68.6	57.2	21.1	25.6	75	69	%	5.2	1.41	2.26	2.6	3.0	0	10	12	3	1	4	5	8	57	November
December	1012	100.4	89.6	67.8	58.6	17.9	21.1	58	53	%	4.7	0.12	1.11	0.2	0.3	3	22	15	1	0	2	3	2	52	December
Year	1012	104.0	86.3	71.2	55.1	23.2	17.9	74.8	69.3	%	5.4	51.09	4.29	88.8	67.5	2	9	12	4	2	10	8	7	46	Year
Annual range	6	—	13.4	8.5	—	13.1	23.2	45	44	%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5					5	5	5	5	5	5	10	5 (1931- 1936)	3	3								No. of yrs' obsns.	



Miles 200 100 0 200 400 600 800 1000 Miles



under 2 ins. 2-4 ins. 4-6 ins. 6-8 ins. 8-10 ins. 10-12 ins. 12-14 ins. 14-16 ins. over 16 ins.

FIG. 59. Rainfall

TCHAUROU

Lat. 8° 54' N.; Long. 2° 36' E. Height above M.S.L. 1,071 ft.

Month	Pres- sure	Air temperature at station level				Mean vapour pressure	Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation				Mean No. of days of				Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month
		Mean of		Absolute max.	Daily max.		Daily min.	Absolute min.	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm			
January	mb. 1011	99.8	94.1	66.2	57.2	mb. 16.2	69	31	38	5.0	4.9	4.5	0.02	0.05	0.7	8.7	9.3	2.0	12	9	4	5	10	2	1	55	January				
February	1009	104.4	98.5	69.0	58.0	20.1	75	32	35	4.7	3.7	5.1	0.60	0.77	2.3	7.7	9.7	3.0	11	9	6	5	14	3	1	46	February				
March	1008	105.0	98.1	71.0	60.8	24.9	77	44	45	6.3	5.8	6.6	1.89	1.80	4.0	15.0	5.0	6.7	2	9	4	10	33	4	1	30	March				
April	1009	103.1	95.2	71.6	65.0	27.5	83	55	63	7.8	7.3	7.4	3.50	1.49	6.3	18.0	1.0	6.3	2	3	7	11	44	8	1	21	April				
May	1010	99.0	91.6	71.1	64.1	29.0	86	60	70	8.8	8.7	8.0	6.40	3.66	12.7	23.3	0.3	11.3	0	1	6	12	42	7	1	30	May				
June	1012	95.0	88.0	69.0	64.4	26.3	90	69	77	9.1	8.8	7.5	8.90	3.50	16.7	23.0	1.0	13.3	1	1	2	3	9	37	6	1	40	June			
July	1013	89.6	84.8	69.0	64.8	25.5	92	73	82	9.5	9.2	7.7	4.28	1.59	13.0	27.7	0.7	8.7	0	1	0	1	2	49	16	1	30	July			
August	1012	92.8	84.1	68.2	63.0	24.9	92	74	84	9.5	9.5	8.1	6.88	3.86	15.3	26.5	0.5	6.2	0	1	0	0	3	51	6	1	38	August			
September	1012	91.4	85.5	69.0	60.8	25.7	92	71	85	9.8	9.2	7.2	8.53	2.80	19.0	22.3	0.2	14.2	1	1	1	3	4	3	1	46	September				
October	1011	95.0	88.4	69.0	65.0	25.8	90	66	84	9.4	8.9	6.6	3.10	1.21	12.2	21.0	0.5	16.2	0	1	1	4	6	3	1	49	October				
November	1010	98.6	92.2	67.0	58.1	23.7	86	46	69	7.6	6.1	4.6	0.44	0.76	2.0	11.8	6.7	5.0	0	1	8	9	3	3	1	44	November				
December	1009	98.0	94.3	64.6	52.8	20.8	81	36	50	5.3	4.4	4.3	0.20	0.76	0.8	7.5	10.8	1.3	7	13	6	6	2	6	1	40	December				
Year	1011	105.0	91.2	68.7	52.8	24.2	84.4	54.8	65.2	7.7	7.2	6.5	44.74	3.86	105.0	212.5	45.3	94.2	1	4	4.5	6	35	5	1	39	Year				
Annual range	5	—	14.4	7.0	—	12.8	23	43	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range				
No. of yrs' obsns.	4	4	4	4	4	4	4	4	4	4	4	3-4	4	4	4	4	4	3	3	—	—	—	—	—	—	—	No. of yrs' obsns.				

FRENCH GUINEA

BEYLA

Lat. 8° 41' N.; Long. 8° 39' W. Height above M.S.L. 2,218 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity	Mean cloud amount (Scale 0-10)		Precipitation			Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.									Month	
		Absolute max.	Mean of		Absolute min.		Mean vapour pressure	8.00 a.m.	6.00 p.m.	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	N.	NE.	E.	SE.	S.	SW.	W.	NW.		Calm
			°F.	Daily max.																			Daily min.	°F.
January	mb. 1011	98.6	87.6	58.8	°F. 50.0	mb. 15.0	72	37	0.33	0.98	0.8	2	0	1	0	1	2	1	1	1	92	January
February	1010	98.6	89.3	65.4	56.4	19.4	83	47	1.59	2.99	3.2	3	2	4	1	8	2	1	1	1	78	February
March	1010	101.6	89.1	67.1	60.8	22.4	90	64	5.17	2.01	10.2	1	2	3	1	3	0	1	0	0	89	March
April	1010	93.2	86.2	67.1	59.0	22.7	89	73	5.87	2.64	10.5	3	1	3	1	5	1	1	1	0	86	April
May	1011	91.4	83.8	66.2	59.0	22.8	88	80	6.94	3.39	14.2	1	1	1	0	2	1	1	1	0	92	May
June	1014	90.4	82.4	65.6	60.8	22.9	92	79	8.56	2.56	15.3	1	0	2	0	1	0	1	0	0	95	June
July	1013	84.2	78.8	64.4	59.0	21.8	91	85	9.57	3.86	16.1	5	2	1	0	1	0	0	1	0	90	July
August	1014	86.6	80.3	64.8	60.8	22.3	92	86	10.43	3.80	19.0	2	5	2	0	0	0	0	0	0	91	August
September	1013	92.6	83.0	65.8	59.0	22.4	91	86	11.45	2.99	20.0	2	0	1	0	1	0	1	0	0	95	September
October	1013	91.4	84.0	65.8	60.8	21.8	89	81	5.55	2.17	14.3	2	0	1	0	0	1	2	1	0	93	October
November	1012	98.6	85.0	65.0	56.4	21.4	89	80	3.47	2.51	7.4	1	0	0	0	1	0	1	0	0	97	November
December	1012	99.0	87.8	59.0	50.0	17.4	80	57	0.90	1.61	2.2	3	0	0	0	1	0	1	1	1	94	December
Year	1012	101.6	84.8	64.6	50.0	21.03	87.2	71.3	69.83	3.86	133.2	2	1	1.5	<1	2	0.5	1	0.5	1	91	Year
Annual range	4	—	10.5	8.3	—	7.9	20	49	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	—	4-5	4-5	—	4-5	4-5	4-5	—	10	—	—	—	—	—	3	—	—	—	—	—	No. of yrs' obsns.

CONAKRY

Lat. 9° 30' N.; Long. 13° 43' W. Height above M.S.L. 16 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month		
		Mean of				Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Percentage of observations										
		Absolute max.	Daily max.	Daily min.	Absolute min.	8.00 a.m.	1.00 p.m.	6.00 p.m.	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Poor visibility	Squall	Thunder	N.	NE.	E.	SE.	S.	SW.	W.	NW.		Calm	
January	mb. 1011	94.1	88.4	72.6	66.8	89	65	68	4.6	2.9	4.1	11.4	4.8	0.06	0.55	0.2	11.2	0	0	0	6	4	7	7	8	15	5	5	43	January
February	1011	93.1	89.0	74.2	69.5	90	65	69	3.9	2.1	2.6	14.2	4.0	0.14	0.55	0.5	7.0	0	0	0	8	1	1	1	6	15	16	21	31	February
March	1010	96.5	89.5	75.2	70.0	85	63	69	3.9	2.4	2.8	14.0	4.0	0.37	2.24	0.8	5.2	1.0	1.4	4	4	1	2	7	17	23	22	22	March	
April	1011	94.3	89.8	75.6	68.8	83	64	70	5.5	3.4	3.6	11.0	6.0	0.87	1.59	2.9	0.4	3.8	4.4	3	1	1	0	6	13	23	25	28	April	
May	1011	93.6	89.0	76.1	65.8	85	70	72	7.8	5.8	5.6	4.6	12.4	6.20	3.15	12.3	2.4	9.6	16.6	3	2	5	5	5	15	14	14	37	May	
June	1013	92.2	86.8	74.6	66.2	89	77	78	8.7	7.3	6.8	1.2	16.6	22.02	6.40	24.3	7.0	12.2	19.4	4	5	7	13	13	16	8	8	26	June	
July	1015	89.3	83.4	73.4	69.0	93	84	84	9.4	8.6	8.6	0.2	26.8	51.07	8.80	29.6	4.0	2.4	11.2	1	2	6	17	18	21	7	4	24	July	
August	1013	87.5	82.1	73.4	68.6	94	87	86	9.7	9.1	9.3	0.0	28.0	41.52	14.15	29.3	4.0	1.8	5.6	1	1	2	8	21	30	9	1	27	August	
September	1013	88.4	84.4	74.0	68.8	94	82	84	9.3	8.3	8.2	0.6	22.8	26.93	11.80	26.3	2.2	3.6	14.2	3	3	5	13	10	14	8	5	39	September	
October	1012	89.6	86.2	73.8	65.4	92	77	79	8.4	7.1	6.5	1.8	17.4	14.65	4.56	21.9	2.8	10.2	22.6	3	3	7	10	6	12	6	4	49	October	
November	1011	90.6	87.3	75.4	69.8	91	74	78	6.4	4.8	5.7	8.0	9.2	4.80	3.81	9.6	3.2	4.4	16.8	3	2	5	3	6	10	8	8	55	November	
December	1011	93.2	88.4	74.6	68.0	88	67	72	4.4	3.3	4.2	13.2	7.4	0.37	1.33	1.0	1.2	0.2	3.2	5	3	1	3	5	7	12	56	December		
Year	1012	96.5	87.0	74.4	65.4	89.4	72.9	75.8	6.8	5.4	5.7	80.2	159.4	169.00	14.15	158.7	50.6	49.2	115.6	4	2	4	7	9	15.5	11	11	36.5	Year	
Annual range	5	—	7.7	3.5	—	11	24	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range	
No. of yrs' obsns.	5	5	5	5	5	5	5	5	5	5	5	5	5	10	10	10	5	5	5	3	3	3	3	3	3	3	3	3	No. of yrs' obsns.	

MAMOU

Lat. 10° 22' N.; Long. 12° 05' W. Height above M.S.L. 2,440 ft.

Month	Pres- sure	Air temperature at station level				Air relative humidity	Mean cloud amount (Scale 0-10)			Precipitation			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month								
		Mean of			Absolute min.		Mean vapour pressure	8.00 a.m.	6.00 p.m.	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Percentage of observations																
		Absolute max.	Daily max.	Daily min.									°F.	°F.	°F.	N.	NE.	E.	SE.	S.		SW.	W.	NW.	Calm				
January	mb. 1011	95.0	90.6	54.4	44.3	°F.	°F.	°F.	mb.	13.1	2.3	2.9	2.7	2.9	2.1	2.9	0.28	1.38	0.4	1	2	24	2	3	2	2	1	63	January
February	1010	98.6	92.8	58.8	47.2	°F.	°F.	°F.	15.9	2.4	2.4	2.1	2.9	2.1	2.1	2.9	0.38	1.34	0.7	1	1	11	5	5	8	15	0	54	February
March	1009	100.4	94.1	64.2	51.8	°F.	°F.	°F.	18.8	2.4	2.4	2.7	4.2	2.7	2.7	4.2	1.84	1.67	3.4	1	1	6	6	4	9	13	3	57	March
April	1010	100.4	92.8	66.1	53.6	°F.	°F.	°F.	21.5	4.2	4.2	4.4	4.8	4.4	4.4	4.8	5.00	3.74	8.9	1	0	10	4	4	12	19	1	49	April
May	1011	97.4	87.6	67.1	59.0	°F.	°F.	°F.	23.3	6.4	6.4	6.3	6.9	6.3	6.3	6.9	8.01	6.70	13.2	1	0	2	1	1	12	25	2	56	May
June	1013	89.6	84.1	64.8	59.0	°F.	°F.	°F.	22.7	7.2	7.2	7.4	6.8	7.4	7.4	6.8	10.11	2.76	19.4	0	1	0	2	1	4	35	8	49	June
July	1014	86.0	80.0	65.4	60.3	°F.	°F.	°F.	22.6	8.6	8.6	8.6	8.0	8.6	8.6	8.0	13.21	3.71	22.8	0	1	0	0	8	26	15	1	49	July
August	1013	84.2	79.2	65.2	59.0	°F.	°F.	°F.	22.3	9.1	9.1	8.8	8.7	8.8	8.8	8.7	15.81	4.29	24.8	0	0	1	2	4	28	14	2	49	August
September	1013	87.6	81.6	65.2	59.8	°F.	°F.	°F.	22.7	8.3	8.3	8.2	7.9	8.2	8.2	7.9	13.43	4.92	22.9	1	1	4	5	4	12	6	0	67	September
October	1013	87.8	83.0	64.2	59.4	°F.	°F.	°F.	22.7	6.9	6.9	7.5	7.6	7.5	7.5	7.6	8.03	2.28	18.3	1	1	8	3	6	7	2	1	71	October
November	1013	90.4	85.5	61.8	50.0	°F.	°F.	°F.	19.9	4.1	4.1	4.9	5.6	4.9	4.9	5.6	2.42	2.11	6.9	1	2	12	6	6	2	1	1	69	November
December	1013	93.0	87.8	56.0	47.0	°F.	°F.	°F.	15.6	3.1	3.1	3.2	3.2	3.2	3.2	3.2	0.34	1.54	1.1	0	4	10	9	9	4	1	0	63	December
Year	1012	100.4	86.6	62.7	44.3	°F.	°F.	°F.	20.09	5.4	5.4	5.6	5.8	5.6	5.6	5.8	78.86	6.70	142.8	1	1	7.5	4	4.5	10.5	12	1.5	58	Year
Annual range	5	—	14.9	12.7	—	—	—	—	10.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	10	10	3	3	3	3	3	3	3	3	3	3	No. of yrs' obsns.

BAMAKO

Lat. 12° 39' N.; Long. 7° 58' W. Height above M.S.L. 1,076 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of		Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.							Month			
		Absolute max.	Mean of		Absolute min.	Mean vapour pressure			8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	Percentage of observations									
			°F.	Daily max.		Daily min.	°F.	8.00 a.m.												1.00 p.m.	6.00 p.m.	N.	NE.	E.	SE.		S.	SW.	W.	NW.	Calm
January	mb. 1012	98.6	92.0	63.0	52.6	mb. 8.6	% 35	% 14	4.7	4.1	5.4	12.0	9	0.04	0.42	0.1	0	0	0	2	26	28	15	1	0	0	0	28	January
February	1011	103.8	96.8	67.0	56.6	9.2	34	12	4.3	3.5	4.3	13.0	7	..	0.03	0.1	0	0	0	3	14	19	20	2	2	1	2	37	February
March	1009	109.0	101.4	73.6	62.1	11.3	35	15	5.0	3.9	4.6	10.0	8	0.07	0.20	1.0	0	0.4	1	2	19	23	15	2	5	3	3	28	March
April	1008	110.0	103.3	76.6	65.0	16.7	47	22	6.3	5.8	6.4	5.0	13	0.62	1.29	2.2	0	1.0	5	3	9	9	17	5	27	5	20	April	
May	1009	108.6	100.8	77.8	69.0	21.3	62	34	7.6	7.2	7.7	2.0	18	2.86	2.68	6.9	0	2.8	8	1	6	5	16	6	31	6	12	17	May
June	1011	105.0	94.3	74.2	64.8	24.6	76	49	7.1	7.2	7.7	2.0	17	5.34	2.72	11.7	0	7.4	12	1	2	4	4	3	38	10	10	28	June
July	1012	98.5	87.6	72.0	65.6	25.5	86	67	8.4	8.4	7.9	0.8	22	10.98	4.19	17.9	0	6.0	18	2	3	2	3	4	25	10	13	38	July
August	1012	92.0	85.6	71.1	67.0	25.8	89	73	9.3	9.2	9.0	0	27	13.68	6.94	19.1	0.2	5.4	16	1	5	4	2	1	25	7	14	41	August
September	1012	94.5	88.2	71.3	67.3	26.3	87	66	8.2	8.3	8.0	1.0	20	8.05	3.22	14.1	0.2	6.0	14	2	3	5	7	15	10	12	1	45	September
October	1011	96.8	92.0	71.6	64.2	24.8	81	52	7.8	7.3	7.6	3.0	17	1.74	2.93	5.4	0	3.6	13	1	6	3	9	12	7	12	48	October	
November	1011	98.3	94.0	67.0	56.2	18.9	60	30	5.9	5.1	6.4	8.0	14	0.58	1.87	1.3	0	0.6	3	1	16	11	17	1	2	1	5	46	November
December	1012	97.4	91.0	63.8	53.6	11.0	40	19	5.5	4.9	6.4	8.0	12	..	0.06	0.1	0	0	0	1	30	17	10	0	2	1	0	39	December
Year	1011	110.0	94.0	70.8	52.6	18.7	61	38	6.7	6.2	6.7	64.8	184	43.96	6.94	79.9	0.4	33.2	90	2	12	11	11	3	15	5	6	35	Year
Annual	4	—	17.7	14.8	—	17.7	55	61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual
range																													range
No. of yrs'	5		5	5		5	5	5	5	5	5	5	5	10	10	—	5	5	3	—	—	—	—	—	—	—	—	—	No. of yrs'
obsns.																													obsns.

KAYES

Lat. 14° 24' N.; Long. 11° 26' W. Height above M.S.L. 183 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity	Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.									Month		
		Absolute max.	Mean of		Absolute min.		Mean vapour pressure	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Poor visibility	Squall	Thunder	Percentage of observations										
			°F.	°F.															°F.	N.	NE.	E.	SE.	S.	SW.	W.		NW.	Calm
January	mb. 1012	106.6	95.4	62.1	52.6	8.2	% 32	% 16	% 16	4.4	4.0	4.7	8	0.08	0.67	0.1	0.2	0	6	29	24	2	0	0	0	0	0	39	January
February	1011	111.4	100.8	66.0	55.1	8.8	31	14	14	3.3	2.5	3.0	3	0	0	0	0	0	8	21	34	2	0	5	2	2	26	February	
March	1009	116.5	105.6	71.6	63.2	9.7	29	13	13	3.5	3.3	3.6	6	0	0	0	0.8	0	9	19	13	2	6	10	7	32	March		
April	1008	118.6	111.2	77.0	66.2	11.6	30	14	12	4.6	4.4	4.7	6	..	0.03	0.1	0	15	12	7	1	5	10	14	7	29	April		
May	1008	117.0	110.2	81.8	71.6	18.9	46	25	21	6.2	5.6	6.0	10	1.01	1.82	2.1	0	9	12	3	2	11	12	15	6	30	May		
June	1011	114.1	104.0	78.6	62.6	26.7	70	42	37	6.7	6.3	6.5	15	3.80	1.95	8.4	0	4	4	2	1	5	7	17	32	5	27	June	
July	1012	108.2	94.3	75.1	64.4	28.6	83	64	61	7.8	7.4	7.4	20	6.28	2.64	11.0	0.8	12	1	1	2	2	7	22	25	6	34	July	
August	1012	102.6	90.2	73.1	67.0	28.8	88	70	70	9.0	9.1	8.6	26	9.49	4.85	16.9	0	14	1	1	2	2	9	22	17	3	43	August	
September	1012	99.6	92.2	73.2	66.2	29.0	89	67	71	7.7	8.1	7.1	17	7.38	2.72	13.0	4.0	12	2	4	5	4	4	9	17	2	53	September	
October	1011	106.4	95.1	74.0	66.8	28.2	85	58	60	7.6	7.5	7.2	15	1.69	1.84	4.6	0.2	7	1	3	5	4	5	11	17	11	43	October	
November	1011	105.6	99.6	68.4	61.8	16.6	57	24	33	4.9	4.8	6.0	11	0.04	0.11	0.6	0.6	0.8	2	16	17	7	4	3	4	0	47	November	
December	1013	106.8	94.0	64.1	53.3	10.1	42	20	24	6.0	5.0	5.8	13	0.01	0.06	0.3	0.2	0.2	9	24	23	2	1	1	1	0	39	December	
Year	1011	118.6	99.4	72.1	52.6	18.8	57	36	36	6.0	5.7	5.9	150	29.78	4.85	57.1	6.8	29.2	5.5	12	11.5	3	4	5	9.5	13	4	37	Year
Annual range	5	—	21.0	19.7	—	—	60	57	59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	—	5	5	—	—	5	5	5	5	5	5	5	5	5	5	5	5	3	—	—	—	—	—	—	—	—	—	No. of yrs' obsns.

BOBO DIOULASSO

Lat. 11° 12' N.; Long. 4° 17' W. Height above M.S.L. 1,421 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity	Mean cloud amount (Scale 0-10)		Mean No. of days of		Precipitation				Mean No. of days of		Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.								Month		
		Absolute max.	Mean of		Absolute min.		Mean vapour pressure	8.00 a.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	N.	NE.	E.	SE.	S.	SW.	W.		NW.	Calm
January	mb. 1011	102.2	93.6	60.3	51.8	10.8	45	23	3.8	5	0.08	0.80	0.1	0.5	0	0.2	8	9	10	11	2	1	1	1	1	57	January
February	1010	103.6	98.0	62.1	51.8	12.3	46	25	3.2	3	0.16	0.75	0.5	0	0.2	0.4	11	9	18	4	5	1	1	0	0	51	February
March	1008	114.8	100.8	69.5	52.8	16.6	54	27	4.2	7	1.08	4.85	1.6	0	0.8	1.0	10	6	17	6	17	3	16	0	25	25	March
April	1008	107.6	100.8	72.2	55.4	21.8	64	37	6.0	10	2.09	2.65	3.8	0	1.4	5.0	8	3	9	2	20	18	15	0	25	25	April
May	1009	106.4	96.3	70.6	63.6	23.8	74	50	5.8	13	4.58	2.76	6.4	0	3.4	7.0	1	1	5	4	30	18	16	1	24	24	May
June	1012	99.6	91.2	71.0	64.6	24.2	81	61	5.7	11	4.75	1.44	9.4	1.0	3.0	8.0	2	0	8	6	33	14	16	1	20	20	June
July	1013	95.0	87.0	69.6	64.4	24.9	88	73	6.3	12	9.84	6.43	10.4	0.8	0.8	8.0	1	2	4	3	26	26	11	1	26	26	July
August	1012	94.6	85.5	69.3	62.1	26.5	91	81	7.1	17	11.99	6.18	16.0	1.0	3.0	10.0	1	0	3	5	31	26	3	0	31	31	August
September	1013	96.0	87.8	68.8	60.0	25.0	89	79	6.6	15	8.54	3.24	11.6	3.0	6.3	11.0	5	1	0	2	17	13	1	0	61	61	September
October	1012	99.4	93.0	69.3	64.8	24.2	79	66	5.2	7	2.51	1.70	6.7	5.0	6.0	8.0	3	1	1	5	14	10	3	0	63	63	October
November	1011	100.4	95.2	66.8	58.1	19.2	65	46	3.4	3	0.74	3.92	1.6	2.0	0.8	2.0	3	5	8	1	7	7	2	1	66	66	November
December	1012	99.2	94.6	62.0	53.6	12.9	54	29	3.2	4	0	0	0	0.2	0	0.2	8	9	7	0	1	1	1	0	73	73	December
Year	1011	114.8	93.6	67.6	51.8	20.2	69	49	5.0	107	46.36	6.43	68.1	13.5	25.7	60.8	5	4	7	4	17	12	7	0	44	44	Year
Annual	5	—	15.3	11.9	—	15.7	46	58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual
range																											range
No. of yrs'	5																										No. of yrs'
obsns.	5																										obsns.

ODIENNÉ

Lat. 9° 31' N.; Long. 7° 33' W. Height above M.S.L. 1,457 ft.

Month	Air temperature at station level				Mean cloud amount (Scale 0-10)		Precipitation			Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.									Month
	Mean of		Absolute min.	°F.	8.00 a.m.	6.00 p.m.	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Percentage of observations									
										Absolute max. °F.	Daily max. °F.	Daily min. °F.	N.	NE.	E.	SE.	S.	SW.		W.	NW.	Calm
January	98.6	90.8	63.8	57.2	0.9	0.9	0.03	0.30	0.1	17	2	6	3	0	0	0	5	67	January
February	103.6	94.6	67.3	60.5	1.7	2.0	0.64	2.72	0.6	6	2	6	1	1	0	1	6	77	February
March	104.4	96.6	71.1	62.8	3.3	3.3	1.45	1.84	4.0	15	4	3	5	4	0	1	8	60	March
April	104.2	94.1	73.8	62.8	3.5	3.5	3.35	1.81	5.6	10	3	5	15	4	2	0	6	55	April
May	100.4	90.4	72.6	66.2	4.0	3.9	5.38	1.87	9.5	4	2	13	2	5	1	0	0	73	May
June	96.3	89.6	71.0	65.4	3.7	3.8	5.65	2.84	9.8	2	3	9	4	14	0	0	0	68	June
July	95.2	86.4	70.0	65.4	6.2	5.2	11.22	6.04	13.1	2	0	8	3	4	0	0	0	83	July
August	93.6	84.6	69.6	65.4	7.5	6.4	15.00	4.88	16.7	1	0	6	3	11	6	2	0	71	August
September	95.0	86.8	69.3	65.0	6.8	5.5	10.36	3.62	16.1	2	3	18	2	2	0	0	1	72	September
October	97.2	89.3	69.1	65.4	3.4	4.2	5.36	2.03	11.8	3	7	19	5	1	0	0	0	65	October
November	97.2	91.0	68.2	59.4	2.7	3.3	2.14	2.02	4.7	2	3	11	3	2	0	2	1	76	November
December	99.0	91.2	63.2	54.2	1.6	2.0	0.21	0.87	0.5	6	4	5	2	0	1	1	4	77	December
Year	104.4	90.6	67.3	54.2	3.8	3.7	60.79	6.04	92.5	6	3	9	4	4	1	0.5	2.5	70	Year
Annual range	—	12.0	10.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5					5		9-10		3								No. of yrs' obsns.	

OUAGADOUGOU

Lat. 12° 23' N.; Long. 1° 32' W. Height above M.S.L. 991 ft.

Month	Pres- sure	Air temperature at station level			Mean relative humidity	Mean cloud amount (Scale 0-10)			Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.			Month
		Absolute max.	Daily max.	Daily min.	Absolute min.	Mean vapour pressure	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	
January	mb. 1012	112.6	97.0	57.6	° F. 48.1	mb. 9.6	3.5	3.5	4.4	13.0	4	0.02	0.18	0.2	1.0	0	0.8	January
February	1011	112.8	101.6	61.0	51.9	9.9	3.2	2.9	3.9	14.0	4	0.10	0.59	0.3	0.4	0.2	0.6	February
March	1008	111.6	106.0	69.6	60.0	11.6	4.6	4.6	4.8	9.0	6	0.55	1.46	0.8	0.2	0.2	1.0	March
April	1007	114.0	107.0	75.8	59.2	19.1	5.8	5.6	6.5	4.0	9	0.79	1.16	3.1	2.0	2.0	4.0	April
May	1009	113.4	102.6	76.8	68.0	25.3	6.4	6.2	7.0	4.0	12	2.86	2.80	6.5	0	3.6	8.0	May
June	1012	111.1	97.4	73.6	62.6	25.6	7.2	6.4	6.5	5.0	13	4.94	2.24	9.5	0	3.8	13.0	June
July	1013	104.2	92.6	71.8	66.1	26.1	8.1	7.7	7.3	1.0	16	8.42	3.86	12.8	1.0	5.0	15.0	July
August	1012	98.8	89.3	70.4	64.1	26.6	8.1	8.3	7.7	0.4	21	10.44	3.07	15.2	3.0	3.4	12.0	August
September	1012	101.4	92.4	70.0	63.8	26.4	7.2	7.1	6.8	2.0	14	5.60	2.74	12.6	4.0	5.2	11.0	September
October	1011	105.5	100.1	71.6	64.4	24.8	5.2	5.6	5.8	3.0	7	0.94	1.52	3.5	6.0	2.8	4.0	October
November	1010	105.5	101.8	66.2	57.2	17.0	3.5	3.7	4.1	8.0	4	0.03	0.13	0.4	6.0	0	2.0	November
December	1012	104.2	97.6	59.6	51.6	11.7	3.6	3.1	4.1	12.0	4	0	0	0	2.0	0	0	December
Year	1011	114.0	98.7	68.7	48.1	19.5	5.4	5.4	5.7	75.4	114	34.69	3.86	64.9	25.6	26.2	71.4	Year
Annual range	6	—	17.7	19.2	—	17.0	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	—	5	5	5	5	5	5	5	10	5	5	5	3	3	3	3	No. of yrs' obsns.

TABOU

Lat. 4° 25' N.; Long. 7° 22' W. Height above M.S.L. 13 ft.

Month	Pres- sure	Air temperature at station level			Mean relative humidity	Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month			
		Mean of				Mean vapour pressure	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Poor visibility	Squall	Thunder	Percentage of observations										
		Absolute max.	Daily max.	Daily min.														Absolute min.	N.	NE.	E.	SE.	S.	SW.		W.	NW.	Calm
January	mb. 1010	°F. 90.2	°F. 86.6	°F. 73.4	°F. 69.0	mb. 29.6	% 92	% 76	% 83	5.4	7.0	9	1.52	2.61	3.9	9.0	0.4	5.0	3	0	1	1	6	18	8	11	52	January
February	1011	93.2	87.3	73.8	68.2	30.3	94	78	85	7.0	2.0	13	2.66	2.27	5.4	5.0	0.6	5.0	4	1	1	2	15	26	9	8	34	February
March	1010	94.1	88.0	74.0	64.6	30.5	94	76	83	7.0	1.0	16	3.94	2.71	8.0	2.0	0.4	5.0	3	0	0	2	17	26	6	11	35	March
April	1011	95.0	88.6	74.2	68.0	30.8	92	75	83	7.0	2.0	12	4.55	5.63	7.8	0.6	0.6	5.0	2	1	1	3	11	28	10	12	32	April
May	1011	95.4	86.4	74.0	69.6	29.9	93	80	84	8.3	0.2	20	16.42	5.56	17.1	1.0	0	6.0	5	0	0	2	18	26	8	8	33	May
June	1014	89.6	83.6	73.8	68.4	28.0	91	83	86	8.7	0.2	23	22.80	—	14.9	3.0	0	2.0	3	0	0	1	30	33	8	4	21	June
July	1016	89.8	82.0	73.2	66.4	25.8	85	77	81	8.4	0.2	23	6.90	—	9.0	1.0	0	0	1	0	0	0	27	43	9	1	19	July
August	1015	88.4	81.2	71.8	66.4	26.1	88	80	84	8.5	0.4	24	3.89	4.46	8.9	3.0	0	0	0	0	1	2	20	42	6	3	26	August
September	1014	86.4	82.1	72.4	67.3	27.1	91	82	87	8.9	0	24	7.79	3.31	17.1	4.0	0	0.2	1	1	4	4	32	33	4	1	20	September
October	1013	88.8	83.8	73.4	69.0	27.5	92	82	88	7.4	0	21	8.71	7.15	15.8	0.8	0.2	0.4	1	1	2	3	29	26	7	2	29	October
November	1011	91.4	85.5	74.2	70.2	29.0	92	77	84	7.3	0.2	13	8.67	5.71	13.3	0.6	0.2	4.0	1	0	1	2	26	20	1	6	43	November
December	1011	90.6	86.2	73.6	67.6	29.2	94	76	83	6.2	3.0	9	4.64	2.37	7.7	2.0	0.6	5.0	2	1	1	4	14	33	5	5	35	December
Year	1012	95.4	85.1	73.4	64.6	28.7	91	79	84	7.6	16.2	207	92.49	—	128.9	32.0	3.0	37.6	2	0	1	2	21	29	7	6	32	Year
Annual range	6	—	7.4	2.4	—	5.0	9	8	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5			5			5			10			5			3			3								No. of yrs' obsns.

PORT ETIENNE

Lat. 20° 56' N.; Long. 17° 03' W. Height above M.S.L. 13 ft.

Month	Pres- sure	Air temperature at station level				Mean vapour pressure	Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.							Month		
		Mean of		Absolute min.	Daily max.		Daily min.	Absolute min.	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	N.	NE.	E.	SE.	S.	SW.	W.	NW.		Calm	
		°F.	°F.																											°F.	°F.
January	mb. 1017	91.8	79.4	54.0	44.6	69	38	56	3.1	2.6	2.9	5.0	18.0	5.0	in. 0.13	in. 0.65	0.3	0	0	21	37	23	2	0	1	4	8	4	January	
February	1016	99.0	82.2	54.8	47.4	71	40	56	2.6	2.2	2.3	3.2	16.8	3.2	0.02	0.18	0.3	0.4	0.4	16	46	11	1	1	2	7	14	3	February	
March	1015	100.4	81.4	57.2	48.0	80	43	62	2.7	2.2	2.1	3.8	20.2	3.8	0.04	0.20	0.3	0	0.4	27	40	7	1	2	0	9	11	4	March	
April	1014	109.6	81.2	58.0	47.0	87	50	72	3.0	2.1	2.0	2.4	18.8	2.4	..	0.04	0.2	0	0.4	24	42	4	0	0	1	9	17	3	April	
May	1013	103.6	82.8	58.8	48.2	83	51	68	3.3	2.1	2.4	4.2	17.6	4.2	0.02	0.08	0.4	0.6	0.6	22	56	3	0	0	1	9	20	2	May	
June	1014	113.8	85.8	60.6	50.4	80	51	68	3.1	2.1	2.0	3.8	19.6	3.8	0.01	0.71	0.2	0.4	0.6	15	38	1	0	1	1	13	12	1	June	
July	1013	95.0	80.8	63.8	54.6	85	64	74	4.2	2.1	2.1	4.6	16.2	4.6	..	0.04	0.1	0.4	0.4	15	38	3	0	0	1	6	33	4	July	
August	1011	102.0	85.3	67.8	49.6	84	64	72	3.7	1.7	1.8	2.2	17.6	2.2	..	0.05	0.1	0.8	0.8	16	35	0	1	1	4	37	3	4	August	
September	1013	107.1	90.8	69.3	63.0	80	53	67	3.5	2.1	2.7	4.6	15.6	4.6	0.34	0.99	1.4	1.0	0.8	44	50	9	0	1	4	27	4	3	September	
October	1014	105.1	86.6	65.4	58.6	79	50	67	3.7	2.9	3.3	6.2	15.4	6.2	0.46	3.27	1.4	3.6	1.0	6	40	8	0	0	5	30	1	0	October	
November	1015	100.4	83.6	61.6	53.5	71	42	66	4.2	3.5	3.8	6.8	12.4	6.8	0.06	0.41	0.3	1.2	0.6	15	39	10	0	1	7	20	7	1	November	
December	1017	89.6	77.8	58.1	49.0	69	48	59	3.8	3.7	4.0	8.3	13.2	8.3	0.37	2.64	0.7	1.2	0.4	22	30	17	2	1	0	5	12	11	December	
Year	1014	113.8	83.2	60.7	44.6	78.2	49.5	65.6	3.4	2.4	2.6	55.1	201.4	55.1	1.45	3.27	5.7	21.2	7.4	17.5	41.5	8	0.5	0.5	1	7	20	4	4	Year
Annual range	6	—	13.0	15.3	—	18	26	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5					5					5			10			5			8 (1931-1938)							No. of yrs' obsns.		

BILMA

Lat. 18° 43' N.; Long. 12° 56' E. Height above M.S.L. 1,171 ft.

Month	Air temperature at station level					Mean vapour pressure	Mean relative humidity		Mean cloud amount (Scale 0-10)		Precipitation			Wind direction Average of observations at 8.00 a.m. and 6.00 p.m.							Month		
	Mean of			Absolute min.	8.00 a.m.		6.00 p.m.	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Percentage of observations												
	Absolute max.	Daily max.	Daily min.								N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm				
January	95.4	78.5	43.4	26.6	° F.	58	40	2.0	1.3	0	0	0	5	29	6	0	0	0	0	0	0	60	January
February	97.2	84.1	46.6	32.0	° F.	48	38	1.3	0.6	0	0	0	1	24	6	3	0	0	0	0	0	66	February
March	107.3	94.1	54.6	38.0	° F.	35	30	1.4	0.8	0	0	0	0	17	14	6	0	0	0	0	0	63	March
April	113.0	103.0	61.8	46.1	° F.	32	29	1.3	0.3	0.01	0.08	0.1	0	10	18	14	1	0	1	1	1	55	April
May	116.6	109.1	69.8	56.4	° F.	32	32	1.2	1.1	..	0.01	0.1	0	4	19	9	9	1	1	0	0	58	May
June	118.4	110.6	72.2	57.0	° F.	33	31	1.2	1.0	0	0	0	0	7	27	6	1	1	1	1	1	56	June
July	116.6	107.6	73.6	61.8	° F.	45	36	2.5	2.5	0.08	0.39	0.6	1	5	16	4	4	2	5	4	4	59	July
August	114.0	104.4	74.4	64.1	° F.	56	43	3.0	2.8	0.49	1.18	1.4	1	4	8	5	3	3	10	1	1	65	August
September	112.3	106.0	70.2	54.6	° F.	46	38	1.3	0.9	0.26	1.34	0.7	1	5	16	4	1	2	7	1	1	63	September
October	109.4	101.8	60.0	45.8	° F.	41	37	0.6	0.2	0	0	0	0	5	28	0	0	0	0	0	0	67	October
November	106.6	91.2	52.6	40.6	° F.	48	42	1.3	0.7	0	0	0	3	14	18	0	0	0	0	1	1	64	November
December	95.0	82.4	47.2	31.8	° F.	54	42	1.8	1.0	0	0	0	4	25	10	3	0	0	0	0	0	58	December
Year	118.4	97.8	60.5	26.6	° F.	44	37	1.6	1.1	0.84	1.34	2.9	1	12	15	5	2	1	2	1	1	61	Year
Annual range	—	32.1	30.2	—	° F.	24	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.		5					5		5		10			3							No. of yrs' obsns.		

ZINDER

Lat. 13° 46' N.; Long. 8° 59' E. Height above M.S.L. 1,676 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity	Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of		Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month		
		Mean of			Mean vapour pressure		8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Squall	Thunder	Percentage of observations										
		Absolute °F.	Daily max. °F.	Daily min. °F.													N.	NE.	E.	SE.	S.	SW.	N.	NW.		Calm	
January	mb. 1016	°F. 88.8	°F. 54.6	°F. —	mb. 4.9	% 21	% 17	% 17	2.2	2.1	2.6	13	4	0	0	0.2	0	1	20	48	1	1	0	0	0	29	January
February	1015	95.6	58.6	—	6.9	19	12	17	1.8	1.4	2.2	16	2	0	0	0	0	1	9	16	18	1	0	1	1	54	February
March	1012	103.0	67.1	—	6.3	16	10	14	2.3	2.7	4.1	10	2	0	0	0.2	0.2	3	12	30	2	1	1	1	0	50	March
April	1010	108.8	73.2	—	8.6	20	10	15	3.3	3.9	4.1	10	3	0.01	0.08	0.2	0.4	4	11	19	2	4	1	7	7	45	April
May	1009	108.4	79.0	—	19.3	44	20	28	4.1	4.6	5.1	7	4	0.69	1.18	3.4	3.0	1	1	6	1	2	7	21	11	50	May
June	1012	104.0	75.6	—	21.7	53	28	36	3.8	3.0	4.8	10	3	2.69	1.85	7.1	6.4	2	1	3	1	2	5	19	12	55	June
July	1013	106.6	72.2	—	24.3	68	48	53	6.1	5.7	5.5	2	6	6.39	3.50	10.0	2.8	1	0	1	1	1	5	24	11	56	July
August	1014	102.4	71.0	—	24.9	76	56	67	7.1	6.7	7.8	2	12	8.37	4.24	14.1	4.8	1	1	0	0	1	4	18	4	71	August
September	1013	106.2	71.5	—	19.3	68	44	54	5.1	4.6	4.4	5	3	3.32	2.30	8.0	3.8	2	1	5	4	6	10	14	52	September	
October	1012	109.0	71.1	—	16.8	50	22	33	2.7	2.5	2.2	15	1	0.11	0.43	0.4	0.2	3	4	27	5	1	2	1	1	56	October
November	1014	105.1	64.6	—	9.8	25	18	25	1.8	2.1	2.5	13	2	0	0	0	0	1	11	37	4	1	0	0	1	45	November
December	1016	91.2	58.8	—	8.3	29	20	27	2.1	2.2	2.1	17	1	0	0	0	0	1	17	28	6	2	1	0	1	44	December
Year	1013	98.4	68.0	—	14.3	40	25	32	3.5	3.5	4.0	120	43	21.58	4.24	43.2	22.8	2	7	18	4	2	3	8	5	51	Year
Annual range	7	20.0	24.4	—	—	60	46	53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5					5					10			5		3							No. of yrs' obsns.			

SENEGAL

DAKAR

Lat. 14° 39' N.; Long. 17° 25' W. Height above M.S.L. 105 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity		Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation				Mean No. of days of		Wind direction Average of observations at 7.00 a.m. and 2.00 p.m.		Month							
		Mean of		Absolute min.	°F.	°F.	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall in.	Max. fall in 24 hrs. in.	Mean No. of rain-days	Poor visibility	Squall	Thunder	Percentage of observations										
		Absolute max.	Daily max.															Daily min.	N.	NE.		E.	SE.	S.	SW.	W.	NW.	Calm
January	1013	96.8	82.0	64.8	59.0	15.3	67	43	50	5.7	4.7	4.4	0.02	0.06	0.6	0.4	0.1	0.2	53	30	7	0	0	1	5	4	0	January
February	1012	97.0	82.8	64.2	58.6	16.3	76	45	51	4.2	3.2	3.4	0.02	0.09	0.3	0.5	0.1	0.4	66	22	3	1	0	0	1	7	0	February
March	1011	99.6	82.0	64.8	59.2	18.3	84	53	59	3.9	3.2	3.4	0.02	0.15	0.2	1.0	0	0.1	72	14	0	0	1	1	3	9	0	March
April	1011	93.8	80.0	65.0	62.5	18.9	87	58	65	4.4	2.7	3.1	0	0	0	0.4	0	0.1	70	8	0	1	0	0	3	18	0	April
May	1011	92.6	82.4	68.0	63.2	21.2	84	59	69	5.5	3.6	3.7	..	0.03	0.2	0.4	0.8	0.1	50	3	0	1	0	2	14	30	0	May
June	1013	93.8	87.5	74.4	65.0	25.7	83	63	70	5.9	4.3	5.4	1.15	2.23	2.4	0.3	3.7	1.5	12	4	2	3	2	5	40	29	3	June
July	1012	92.0	87.6	76.5	70.2	27.4	81	67	70	7.4	6.3	6.9	3.51	5.94	8.8	0.3	3.6	4.4	9	4	3	2	4	11	46	21	0	July
August	1012	93.6	86.8	76.0	69.5	28.5	86	73	77	8.4	7.9	8.1	10.41	8.42	15.1	0.3	4.8	6.6	6	6	6	8	12	17	30	15	0	August
September	1012	91.8	87.8	76.5	69.5	29.5	87	72	76	7.6	6.9	7.2	5.71	2.85	12.6	0.7	6.9	8.0	8	7	13	11	13	22	16	2	2	September
October	1012	94.5	88.0	76.3	69.8	28.0	86	67	72	6.8	6.6	6.6	1.65	3.78	4.0	0.4	3.4	3.5	31	10	5	5	4	15	20	9	0	October
November	1012	98.0	87.1	73.0	65.8	22.3	78	51	62	5.7	4.9	5.4	0.17	1.00	0.8	0.9	0	0.1	60	21	2	1	1	2	4	9	0	November
December	1013	95.4	83.4	68.0	61.6	17.2	67	44	57	6.3	5.4	6.2	0.02	0.08	0.4	1.6	0	0.4	54	26	8	0	0	1	4	7	0	December
Year	1012	99.6	84.8	70.6	58.6	22.38	80.5	58.0	64.8	6.0	5.0	5.3	22.68	8.42	45.4	7.2	23.4	25.3	41	13	4	2.5	3	5	15.5	15.5	0.5	Year
Annual range	2	—	8.0	12.3	—	14.8	20	30	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual range
No. of yrs' obsns.	5	5					5					10			7	5		6 (1921-35)							No. of yrs' obsns.			

ST. LOUIS

Lat. 16° 01' N.; Long. 16° 30' W. Height above M.S.L. 25 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month			
		Absolute max.	Mean of		Absolute min.	Mean vapour pressure	Mean relative humidity			Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Percentage of observations										
			°F.	Daily max.			Daily min.	°F.	°F.	°F.	8.00 a.m.	1.00 p.m.	6.00 p.m.	Clear sky	Overcast sky	Average monthly fall	Max. fall in 24 hrs.	Mean No. of rain-days	Poor visibility	Squall	Thunder	N.	NE.	E.	SE.	S.	SW.		W.	NW.	Calm
January	1013	101.4	85.0	60.0	50.8	59	33	55	4.8	4.1	4.7	13.4	8.8	0.05	0.26	0.7	1.0	0	0.2	0.2	0.2	15	42	20	1	0	0	2	14	6	January
February	1012	105.1	85.1	61.0	51.8	68	44	63	3.4	2.5	2.9	16.2	4.4	..	0.05	0.3	3.4	0.2	0.2	0.2	22	15	12	2	0	1	3	22	23	February	
March	1011	108.6	83.4	62.5	52.0	76	54	68	3.2	2.5	2.8	16.4	2.4	..	0.02	0.1	5.4	0	0.2	0.1	34	15	7	1	0	1	4	37	1	March	
April	1011	105.8	76.5	62.6	57.6	87	73	79	3.5	2.8	2.8	17.4	4.2	..	..	0.1	5.6	0	0	0	27	5	0	1	0	2	13	50	2	April
May	1010	102.2	79.0	66.1	60.8	82	69	75	4.5	3.4	3.6	13.4	6.2	0.07	0.30	0.6	1.0	0	0.8	2	21	3	2	1	1	4	26	40	2	May	
June	1012	106.2	86.4	74.0	62.5	81	67	74	5.4	5.2	4.4	10.4	8.2	0.34	0.89	1.7	1.2	0.6	1.2	1	3	2	1	1	2	12	42	35	2	June	
July	1013	95.2	88.6	76.6	68.8	81	67	71	7.5	6.0	6.2	3.0	13.2	2.18	2.23	4.6	0.2	1.8	3.6	1	3	2	2	2	1	8	43	32	8	July	
August	1011	95.4	89.5	77.2	69.5	85	70	74	7.8	7.4	7.2	1.0	19.2	7.66	3.31	12.4	0	4.4	8.4	1	2	3	4	2	6	41	28	13	August		
September	1012	100.8	91.0	77.6	69.3	85	70	73	7.0	6.6	6.2	3.8	15.2	4.04	3.10	8.4	0.4	5.6	7.8	2	4	2	8	4	10	22	35	7	September		
October	1012	101.4	89.1	76.1	64.8	82	66	74	5.9	5.3	6.0	7.8	12.8	0.96	1.54	2.7	0	2.8	2.6	4	16	4	4	2	3	1	20	42	8	October	
November	1012	103.3	87.5	69.6	57.6	66	46	66	4.9	4.5	4.7	11.4	9.0	0.14	0.55	1.0	1.2	0	0	9	25	26	9	1	0	1	3	31	4	November	
December	1013	103.1	85.0	63.4	51.0	60	47	61	5.7	5.2	5.7	7.8	11.2	0.02	0.10	0.6	0.8	0.6	0.4	17	38	15	2	0	1	2	24	1	December		
Year	1012	108.6	85.5	69.0	50.8	76.0	58.8	69.4	5.3	4.6	4.8	122.0	114.8	15.46	3.31	33.2	20.2	16.0	24.4	15.5	13	7	2	1	4	18.5	32.5	6.5	Year		
Annual	3	—	13.5	17.6	—	26	27	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Annual	
range																														range	
No. of yrs'	5																													No. of yrs'	
obsns.																														obsns.	

ZIGUINCHOR

Lat. 12° 32' N.; Long. 16° 21' W. Height above M.S.L. 18 ft.

Month	Pres- sure	Air temperature at station level				Mean relative humidity	Mean cloud amount (Scale 0-10)			Mean No. of days of		Precipitation			Mean No. of days of			Wind direction Average of observations at 8.00 a.m., 1.00 p.m., and 6.00 p.m.								Month																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Absolute max.	Mean of		Absolute min.		°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.

TOGO

ATAKPAME

Lat. 7° 32' N.; Long. 1° 09' E. Height above M.S.L. 1,129 ft.
Period of years 1899-1914

Month	Pressure	Air temperature at station level		Mean relative humidity	Mean cloud amount (Scale 0-10)	Precipitation	Mean No. of days of	
	Daily mean at station level corrected to lat. 45°	Mean of				Average monthly fall	Rain	Thunder
		Daily max.	Daily min.					
	mb.	°F.	°F.	%		in.		
January	970	90.0	69.6	56	4.1	0.8	2	3
February	969	92.3	70.2	59	4.8	1.7	4	3
March	969	92.5	71.2	65	4.3	2.6	8	6
April	969	88.5	70.2	76	3.3	5.6	10	5
May	970	87.6	70.2	76	5.4	6.0	11	9
June	972	84.9	69.3	79	5.4	7.2	14	13
July	973	80.6	68.4	86	7.4	8.4	16	4
August	972	80.4	68.0	87	7.0	6.8	16	5
September	971	81.9	68.4	86	7.0	7.2	16	4
October	971	85.5	68.5	81	6.2	5.5	12	6
November	970	88.9	69.1	74	4.8	1.1	3	3
December	970	89.2	68.2	64	4.3	0.9	2	1
Year	970.5	86.9	69.3	74	5.3	53.8	114	62
Annual range	4	12.1	3.2	31	—	—	—	—
No. of yrs' obsns.	3-5	4-5	4-5	4-5	4-5	14-16	11	3-4

LOME

Lat. 6° 08' N.; Long. 1° 13' E. Height above M.S.L. 34 ft.
Period of years 1900-1914

Month	Pressure	Air temperature at station level		Mean relative humidity	Mean cloud amount (Scale 0-10)	Precipitation	Mean No. of days of	
	Daily mean at station level corrected to lat. 45°	Mean of				Average monthly fall	Rain	Thunder
		Daily max.	Daily min.					
	mb.	°F.	°F.	%		in.		
January	1009	85.1	72.2	81	7.0	0.6	1	1
February	1009	86.7	73.9	83	6.8	0.9	2	3
March	1008	87.9	74.3	82	6.2	1.8	4	4
April	1009	86.2	73.9	82	6.1	4.6	6	5
May	1010	85.5	73.9	82	6.9	5.7	9	6
June	1013	82.8	72.7	86	7.4	8.8	12	2
July	1013	79.7	71.4	88	7.3	2.8	7	0
August	1012	78.8	70.9	88	7.1	0.3	3	0
September	1011	80.2	71.6	87	7.1	1.4	7	2
October	1011	83.3	72.1	84	6.4	2.4	6	4
November	1009	85.5	72.5	83	6.6	1.1	3	4
December	1009	85.3	71.8	82	7.2	0.4	1	1
Year	1010	83.8	72.5	84	6.8	30.8	61	32
Annual range	5	9.1	3.4	7	—	—	—	—
No. of yrs' obsns.	1-2	5	5	5	5	14-15	14-15	6-8

APPENDIX II

PERCENTAGE FREQUENCY OF SWELL

Coast of Senegal

	<i>Ÿ.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>Ÿ.</i>	<i>Ÿ.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>
Swell from NW. quadrant .	59	68	71	77	70	63	45	35	48	54	55	61
Swell from NE. quadrant .	27	19	10	11	13	12	8	9	11	19	26	22
Swell from SE. quadrant .	1	0	0	1	1	3	10	7	8	7	3	0
Swell from SW. quadrant .	1	3	4	2	3	11	17	33	12	8	4	3
No swell	7	6	8	5	8	5	10	3	10	7	9	10
Confused swell	5	4	7	4	5	6	10	13	11	5	3	4
Slight swell	49	43	38	30	43	47	45	49	52	57	52	53
Moderate swell	35	43	46	57	42	40	32	32	26	28	34	31
Heavy swell	4	4	1	4	2	2	3	3	1	3	2	2
Total No. of observations .	598	663	178	557	784	608	722	599	672	713	677	529

South-west Coast

	<i>Ÿ.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>Ÿ.</i>	<i>Ÿ.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>
Swell from NW. quadrant .	25	29	27	22	13	3	0	0	1	4	6	15
Swell from N.E. quadrant .	8	5	2	2	2	1	0	0	0	3	0	3
Swell from SE. quadrant .	25	24	28	29	43	59	51	34	47	51	59	44
Swell from SW. quadrant .	13	13	17	18	16	26	35	59	36	24	15	15
No swell	23	24	19	15	14	5	9	1	8	13	13	14
Confused swell	6	5	7	14	12	6	5	6	8	5	7	9
Slight swell	62	63	65	61	49	56	59	57	51	63	60	67
Moderate swell	9	8	9	10	25	33	25	36	33	19	20	10
Heavy swell	0	0	0	0	0	0	0	0	0	0	0	0
Total No. of observations .	671	758	674	624	729	606	679	555	651	748	764	597

The Ivory Coast

	<i>Ÿ.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>Ÿ.</i>	<i>Ÿ.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>
Swell from NW. quadrant .	1	1	1	1	0	0	0	0	0	0	0	0
Swell from NE. quadrant .	3	0	0	0	1	0	0	0	0	0	0	0
Swell from SE. quadrant .	23	46	31	61	50	59	44	41	59	36	41	55
Swell from SW. quadrant .	47	42	57	26	44	38	52	54	37	58	48	33
No swell	22	9	8	9	3	1	4	2	3	5	8	12
Confused swell	4	2	3	3	2	2	0	3	1	1	3	0
Slight swell	65	75	81	66	52	42	64	49	57	51	60	61
Moderate swell	9	14	8	22	43	50	32	43	39	42	27	27
Heavy swell	0	0	0	0	0	5	0	3	0	1	2	0
Total No. of observations .	277	233	208	212	233	258	256	274	233	333	262	223

Bight of Benin

	<i>Ÿ.</i>	<i>F.</i>	<i>M.</i>	<i>A.</i>	<i>M.</i>	<i>Ÿ.</i>	<i>Ÿ.</i>	<i>A.</i>	<i>S.</i>	<i>O.</i>	<i>N.</i>	<i>D.</i>
Swell from NW. quadrant .	3	0	0	0	0	1	0	0	0	0	1	0
Swell from NE. quadrant .	0	0	0	0	0	0	0	0	0	0	3	0
Swell from SE. quadrant .	23	24	30	31	48	32	13	28	27	25	18	46
Swell from SW. quadrant .	42	69	36	44	28	41	67	67	61	61	31	41
No swell	32	7	34	14	24	25	19	5	12	14	47	12
Confused swell	0	0	0	11	0	1	1	0	0	0	0	1
Slight swell	63	83	59	59	43	39	40	58	68	46	44	84
Moderate swell	5	10	7	16	29	21	37	34	16	40	9	3
Heavy swell	0	0	0	0	4	14	3	3	4	0	0	0
Total No. of observations .	57	77	41	73	72	110	144	122	49	154	111	74

APPENDIX III

AUTHORS

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